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APRIL 1958

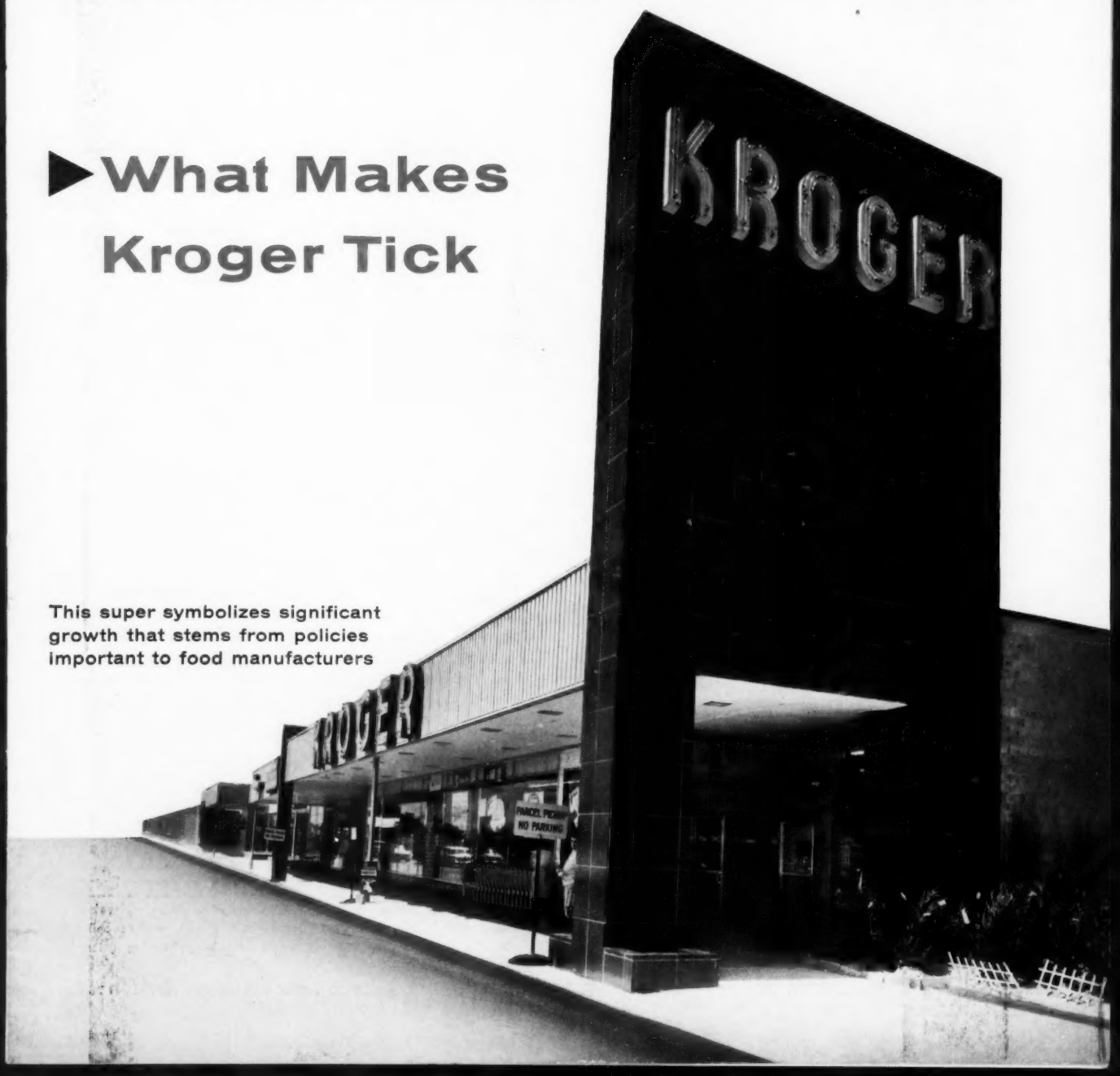
$1.00

FOOD ENGINEERING

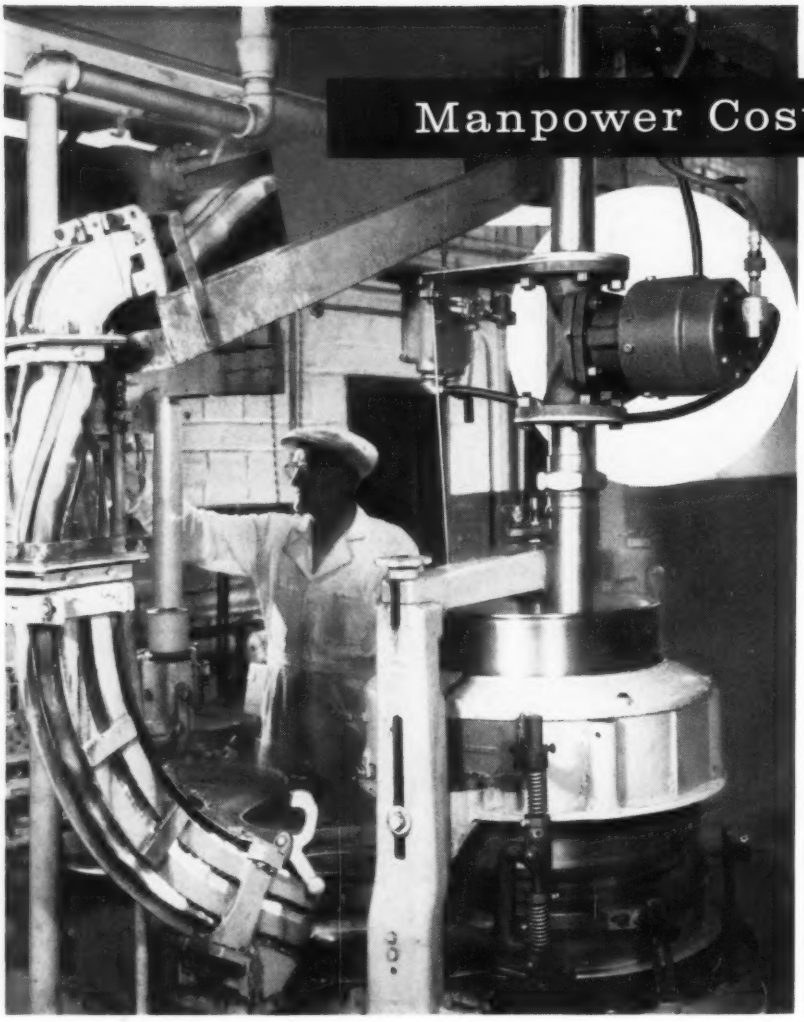
A McGRAW-HILL PUBLICATION

FOR MANAGEMENT
IN MANUFACTURING,
PACKAGING, MARKETING

▶What Makes Kroger Tick



This super symbolizes significant growth that stems from policies important to food manufacturers



Manpower Costs Cut 50%

by power-operated

GRINNELL-SAUNDERS DIAPHRAGM VALVE

AT ALBERS MILLING COMPANY, A DIVISION OF CARNATION COMPANY. When meat in canning vat is almost used up, float activates an *automated* Grinnell-Saunders Diaphragm Valve. Valve opens permitting a fresh supply of food to come down from floor above. Operation is at rate of 12 cycles a minute, 8 hours a day, 5 days a week — at 190°F.

A *single* stainless steel Grinnell-Saunders Valve, with neoprene diaphragm, has made a profitable difference at Albers Milling Company, Hillsboro, Ore. By replacing a *leaky, manually-operated* valve with a *tight-closing, power-operated* Grinnell-Saunders Diaphragm Valve, Albers ended a messy, unsanitary floor condition. Moreover, manpower costs were *halved* — and production *increased!*

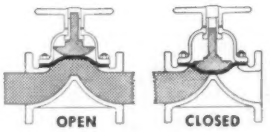
Grinnell-Saunders Valve provides a positive closure, even over solid pieces of food. In addition, there are no pockets to trap solids—no chance of food contamination by product coming in contact with valve's mechanism or lubricant. Maintenance, too, is low. The only part of the valve which ever wears out in normal use is the diaphragm, which can be replaced easily without removing the valve body from the line.

Grinnell-Saunders Diaphragm Valves can be supplied for both handwheel and quick-acting lever operation, as well as power operation. They are available with body, lining and diaphragm materials to meet practically every requirement. For details, write Grinnell Company, Inc., 277 West Exchange Street, Providence, Rhode Island.

GRINNELL

WHENEVER PIPING IS INVOLVED

Diaphragm lifts high for streamline flow in either direction.



Diaphragm presses down tightly for a positive, leakproof seal.

Grinnell Company, Inc., Providence, Rhode Island • Coast-to-Coast Network of Branch Warehouses and Distributors

pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermolier unit heaters • valves
Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies
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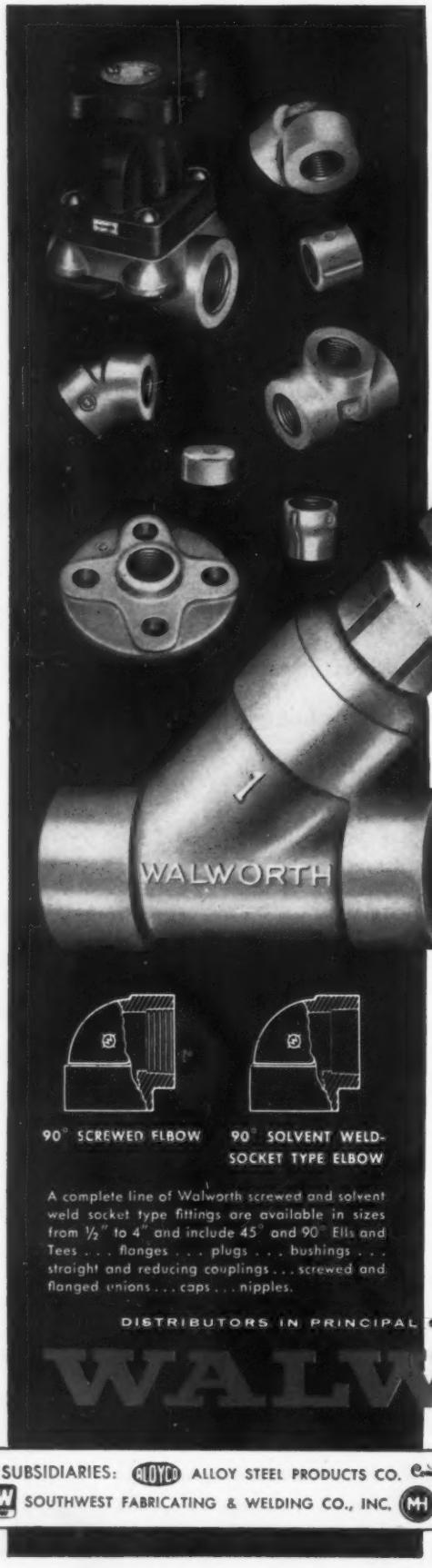

FOR THE LASTING PROTECTION OF PLASTIC PIPING SYSTEMS....

Specify

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PVC

(rigid polyvinyl chloride)

Valves and Fittings!

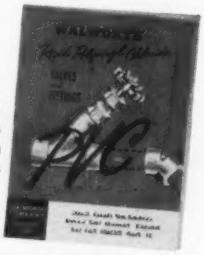
Walworth plastic valves and fittings are made of non-aging, non-corrosive and non-toxic unplasticized rigid polyvinyl chloride (PVC). These products are highly resistant to chemical attack and offer the advantages of immunity to galvanic corrosion and high impact strength at temperatures as high as 150°F. Durable and light, Walworth PVC valves and fittings are simple to install, easy to maintain (no painting), and add a smooth, clean appearance to your piping system.

Walworth PVC Y-Globe Valves are designed to regulate the flow of alkalies, acids, and similar corrosive fluids. Walworth PVC Diaphragm Valves* are commonly used in systems handling corrosive fluids, especially those containing suspended materials, and can be furnished with diaphragms suited to your application.

*Hills — McConna (Saunders Patent)

90° SCREWED ELBOW 90° SOLVENT WELD-SOCKET TYPE ELBOW

A complete line of Walworth screwed and solvent weld socket type fittings are available in sizes from ½" to 4" and include 45° and 90° Ells and Tees . . . flanges . . . plugs . . . bushings . . . straight and reducing couplings . . . screwed and flanged unions . . . caps . . . nipples.



SEND FOR THIS BOOKLET. It describes mechanical and thermal properties, working pressures, sizes and dimensions, application and assembly data for the complete line of Walworth PVC Valves and Fittings. Please use company letterhead.

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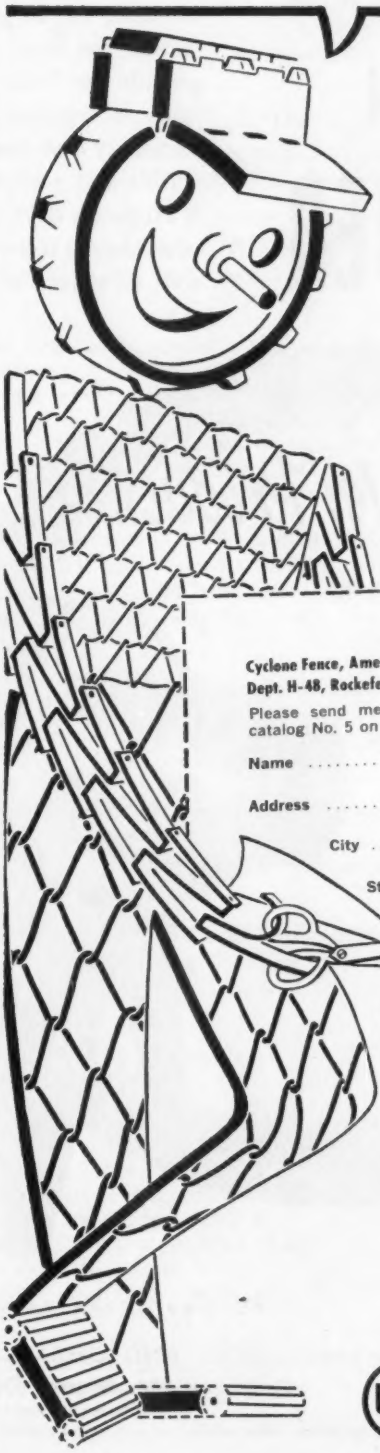
CY BELT says

"Let me show you how to save handling time!"



UNQUESTIONABLY it costs you time—and a lot of money—to move materials through your production line. Have you ever figured out how much time and expense you could save by eliminating as much manual handling as possible? A Cyclone Conveyor Belt representative will be happy to help you analyse your present methods, without obligation to you. And his suggestions will be tailored to *your* plant and *your* product. Cyclone Conveyor Belts are available in many sizes, designs and materials. We'd like to send you a free illustrated catalog showing Cyclone's complete line of belts. Just fill in the coupon.

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Introducing the NEW

BAR-TYPE BEAN GRADER

Introducing a completely new principle of size grading, this amazing machine has been proved capable of *doubling production capacity* of conventional type machines, without sacrificing efficiency. Although capacities will vary according to the variety of beans being graded, extensive tests were made on whole green beans at capacities up to 3400 pounds per hour. On cut beans, capacities up to 4200 pounds per hour were attained. No additional floor space is required. The new design features alternate stationary and diamond-shape rocker bars, eliminating spirals and pocket panels in the cylinder. Operation is extremely efficient and practically noiseless. Get complete details today. Call your nearest FMC representative, or write for information.

Doubles Production Capacity!

- Highest efficiency on both whole and cut beans
- Size-grades by diameter and in accordance with U.S. Standards
- Available in single grader for 2 separations, or double grader with 3
- Moving parts — and maintenance costs — reduced to a minimum

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TRENDS & FORECASTS

SPECIAL FOOD SERVICE to EXECUTIVES

More employment, plus increase in working hours and wages, will create enough consumer income to bolster outlook for business and provide a cheerier finish for '58. That's how McGraw-Hill economists see it.

One better-business indicator is expected rise in orders for new machinery. For 1st quarter of '58, increase of 1% is expected over last quarter of '57, with another 5% boost in second quarter of this year.

Number of food consumers in U.S. reached 172.8 million last year, a 3 million increase, Census Bureau reports. Baby food manufacturers benefit from the birth of 4,302,000 babies, 82,000 more than in '56.

14 million Americans are 65 or older, and at least 5 million are beyond age 75. Sizable market for geriatric foods.

Retail food chains project a gain of 5.3% in sales this year, and in March, the increase was running well ahead of that figure.

A 24% expansion of frozen-food sales area by '60 is planned by members of National Assn. of Food Chains. Preparation area will increase 21%.

Vending machines sold $843 million worth of foods last year, *Vend* reports. Sales ($ millions) were: Confections, 301; soft drinks in cups, 101.6, in bottles, 258; coffee, 94.7; ice cream, 22.8; milk, 50; hot canned foods, 14.85. Canned foods are gaining fast.

Look for more food companies to take on non-food items of types now sold in supermarkets. Profit margins would be higher, same distribution channels could be used, and wider product line could be offered.

Milk production of 126.4 billion lb. set new record in '57 for 5th consecutive year. This despite 2% decline in number of milk cows. Production gain was 0.9 billion lb. Similar increase is forecast for '58.

Total meat production in '58 is forecast 1% below that of '57. Anticipated Fall increase in pork is not expected to offset decreases in beef, veal, and lamb. Consumption is forecast at 154 lb. per capita, off 5 lb.

Shipping Cost Poses Problem

Transportation costs are an important factor in food prices and in the post-war widening of farm-retail price spread, according to Grocery Manufacturers of America.

Intercity transportation cost alone represents 7 to 8% of the retail value of domestic foods, and local transportation involves a sizable additional amount.

The transportation cost impact on some products is, of course, much above the over-all average. For products like California lettuce and Florida sweet corn, the expense of shipping to major consuming areas exceeds 20% of the retail price. For canned cling peaches, transportation costs from canner to wholesale distributor, according to a government study, average 13% of the retail price. And trade reports indicate 20% on some of the long cross-country hauls.

The Interstate Commerce Commission has authorized 16 major rail freight increases since 1946. The latest went into effect on Feb. 15.

See Developments to Watch p. 15

When you want
WET-STRENGTH

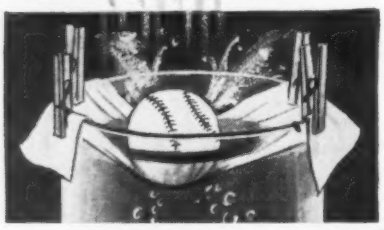
Patapar® *has it!*

Looking for a paper with high wet-strength?—a paper that resists grease, too? These are basic qualities of Patapar Vegetable Parchment.

Made from pure cellulose, Patapar is odorless, tasteless, non-toxic.

Perhaps some problem in your business can be solved with one of the hundreds of different types of Patapar that are available for packaging and industrial uses.

Tell us the application you have in mind. We'll send information and samples of the type of Patapar recommended. No obligation. Please write on your company letterhead.



Patapar®
Vegetable Parchment
HI-WET-STRENGTH · GREASE-RESISTING

HEADQUARTERS FOR VEGETABLE PARCHMENT SINCE 1885

Trends & Forecasts

Rail freight rates on major agricultural commodities have risen much faster since 1946 than the total price spread of which they are a part. These rates have increased an average of more than 90%, about half again as much as the percentage increase for the total spread. Rates on some individual foods are up more than 100%.

Truck rates, for which there is no national index, are generally said to be up at least as much as rail rates.

These freight rate increases are causing grocery manufacturers to review their entire transportation operation to increase efficiencies in every possible way, including the establishment of pricing structures to stimulate the order sizes which make for economical handling.

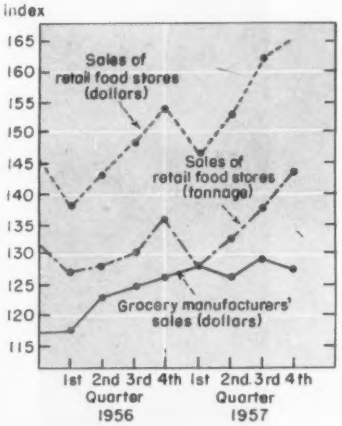
Processing Crops Forecast

Food companies intend to contract for less acreage of green peas for processing in 1958, but for a little more acreage of tomatoes. And less spinach is expected to be processed from the winter corp.

USDA reports that the green pea crop will amount to 410,200 acres, which is 15% less than last year.

Freezers will contract for 112,100 acres, down 16% from last year but only 3% below average. Western companies expect to reduce their acreage 29%, while those in the Central and Eastern states indicate a cut of 13%.

The prospective acreage for can-



STRONG FINISH in 1957 was chalked up by dollar volume and tonnage of retail food store sales. But grocery manufacturers' dollar sales volume dipped a little in last quarter. (Source: Grocery Manufacturers of America.)

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The Label Tells How...

Heinz improves quality with TORULA YEAST

torula yeast

now used in

New Heinz Baby Foods

Lake States Torula Yeast boosts nutritional value in many good food products. Heinz Baby Foods is a typical example. You can probably improve the nutritional value of *your* product with the addition of Torula Yeast. Why not investigate and consider its many advantages? Write today for samples and full information.

Lake States Torula Yeast was selected by H. J. Heinz Company, famous food processors, as an important ingredient in their new High Meat line of baby foods. The excellence of this fine dried yeast is due to its being primary grown in sterile media and produced under constant control. It consistently exceeds U.S.P. standards. This remarkable ingredient offers high levels of B-complex factors and protein. The taste is bland and the product has excellent stability and uniformity.

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Lake States Yeast Corporation, Rhinelander, Wisconsin • Sales Office: 500 5th Avenue, New York 36, New York, or Charles Bowman and Company, 220 E. 42nd Street, New York 17, New York • 600 S. Michigan Avenue, Chicago 5, Illinois • 170 E. California Street, Pasadena 1, California

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NEW

FAIRBANKS-MORSE

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SINGLE PHASE

CAPACITOR

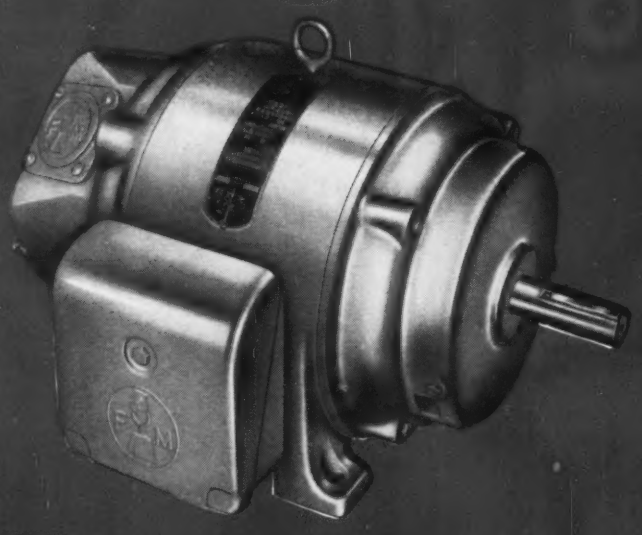
MOTORS

Newest addition to the F-M line of improved electrical equipment, single-phase capacitor-start motors are designed for severe applications.

New drip-proof frame and bearing arms are rigid, durable, corrosion-resistant. No pressed steel or sheet aluminum in any structural part. Famous F-M Copperspun rotor with shaft, fans and centrifugal switching mechanism dynamically balanced as a unit for smooth, vibrationless operation.

Starting capacitors are designed for maximum starting torque . . . minimum starting current. Rugged, trouble-free centrifugal switch features oversized snap-action contacts.

New Bulletin 2401 giving complete details will bring you up to date on the newest in capacitor-start, induction-run motors. Write: Fairbanks, Morse & Co., Dept. FE-4, Chicago 5, Illinois.



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a name worth remembering when you want the BEST

ELECTRIC MOTORS AND GENERATORS • DIESEL LOCOMOTIVES AND ENGINES • PUMPS • SCALES • RAIL CARS • HOME WATER SERVICE EQUIPMENT • MAGNETOS

ning is 298,100 acres, 15% lower than last year and 12% below average. Most of this reduction is in the Central states.

Indicated tomato acreage is up about 1% over last year, to 318,150 acres, but is 14% below average. No marked changes in acreage from last year are expected in major producing states.

The amount of spinach processed from the winter crop in Florida and early spring crop in California is expected to be 15% less than in 1957. The forecast in these two states is 60,600 tons, compared with 71,400 tons in 1957.

HORS D'OEUVRES

▶ **Woman's way to a man's heart is through his stomach. Unfortunately, that way passes through the man's pocketbook.**

▶ **Most popular cook in our set is a new bride. When the label on a can of vegetables says "heat with liquor"—she does!**

▶ More family dining is urged because of its social satisfaction, spiritual significance, and influence on family unity. It also aids digestion.

▶ **Domestic electronic ovens cook steaks or cakes in 3 minutes. And when the wife says, "I'll have dinner in a minute", she really means it.**

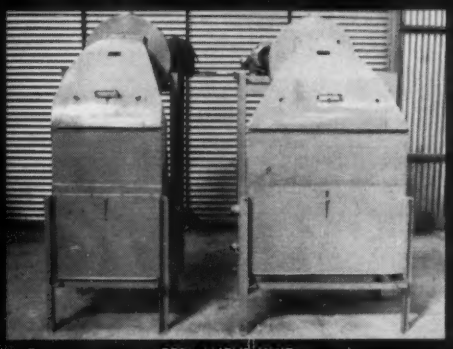
▶ Costs $325 million a year to feed the pooches of this nation. But it saves a lot of meat on people's legs.

▶ **Country club members spend $244 a year for food, $141 for beverages, and only $51 for golf. Elbow bending is the favorite sport.**

▶ Wet forces last year won 235 local-option elections involving the sale of beer, against 69 for the drys. Prohibition may not be dead, but its dying at the grass roots.

▶ **Perfume added to motor fuel "sweetens" exhaust odors. Now food plants with industrial trucks can become irresistible to workers.**

Clean by VACUUM
(AIDED BY GRAVITY)
THE SAFE HARMLESS WAY

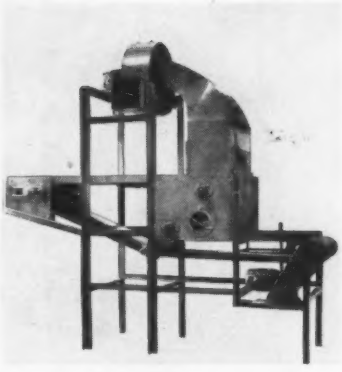

PERMANENT UNIT

- Green Peas
- Baby Limas
- Ford Hooks
- Snap Beans
- Brussel Sprouts
- Strawberries
- Dry Grains

Never Before Offered
The All New
T & C VACU-CLEANER

Simplicity in design (no valves, no shakers, no screens) makes the T&C Vacu-Cleaner, the answer to all food processors cleaning problems. The Vacu-Cleaner does a complete job with the tenderest of vegetables and berries through the exclusive T&C vacuum process. The economical T&C Vacu-Cleaner does an efficient job with a small (3 hp.) motor.

Investigate now! Units are designed for both portable line use or can be attached permanently to single lines. Air Pressure is easily and quickly regulated by a twist of a wheel to effectively clean the lightest or the heaviest food products.


PORTABLE UNIT

The T&C VACU-CLEANER quickly and easily removes . . . SPLITS and SKINS, LOOSE PODS and LEAVES

AVAILABLE FROM THE MANUFACTURER TO THE TRADE

PIONEERS IN RESEARCH AND DEVELOPMENT OF FOOD PROCESSING EQUIPMENT

T & C MANUFACTURING COMPANY
1601 Mono Drive Modesto, California
Phone LAmbert 3-5283

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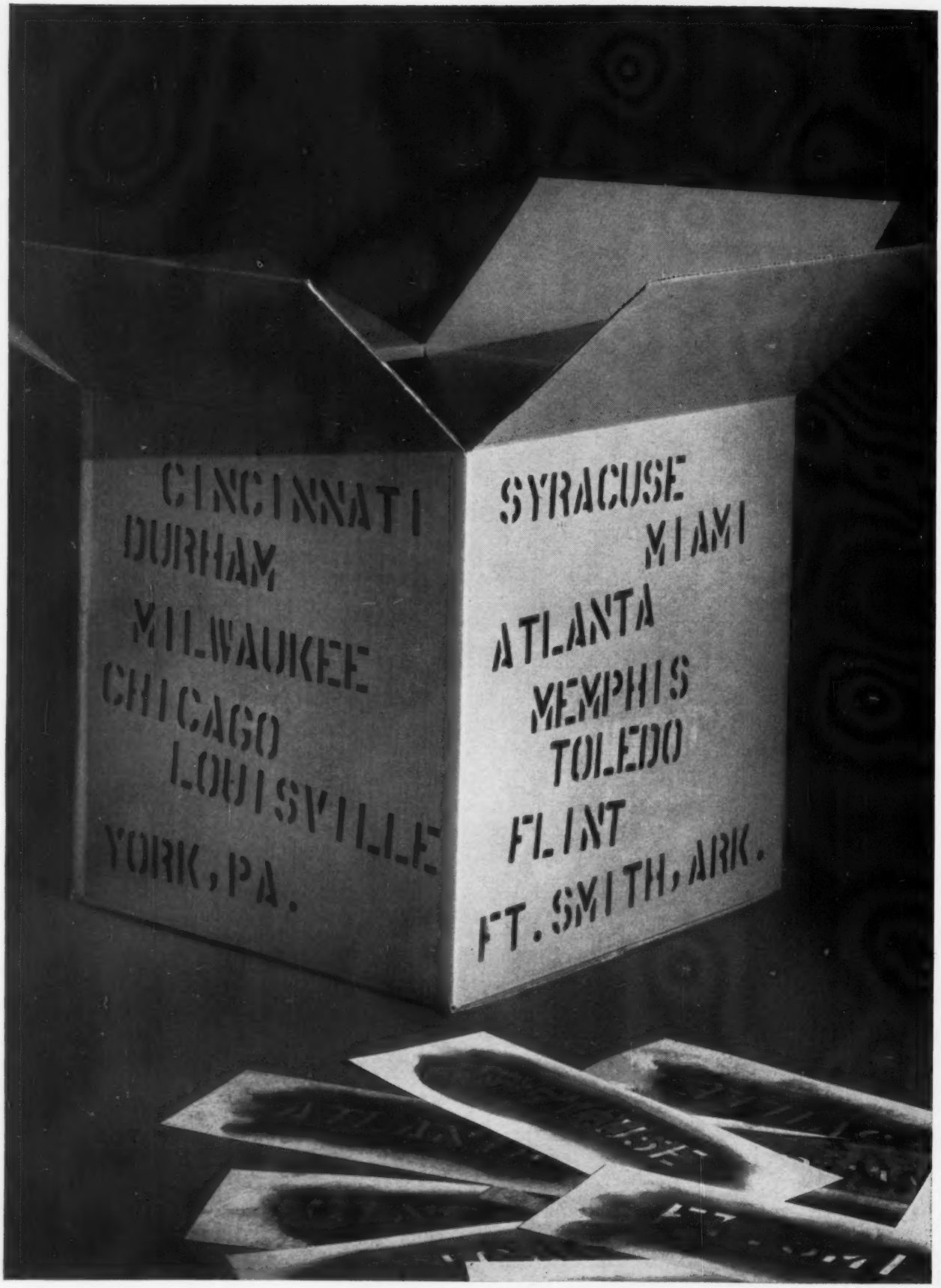
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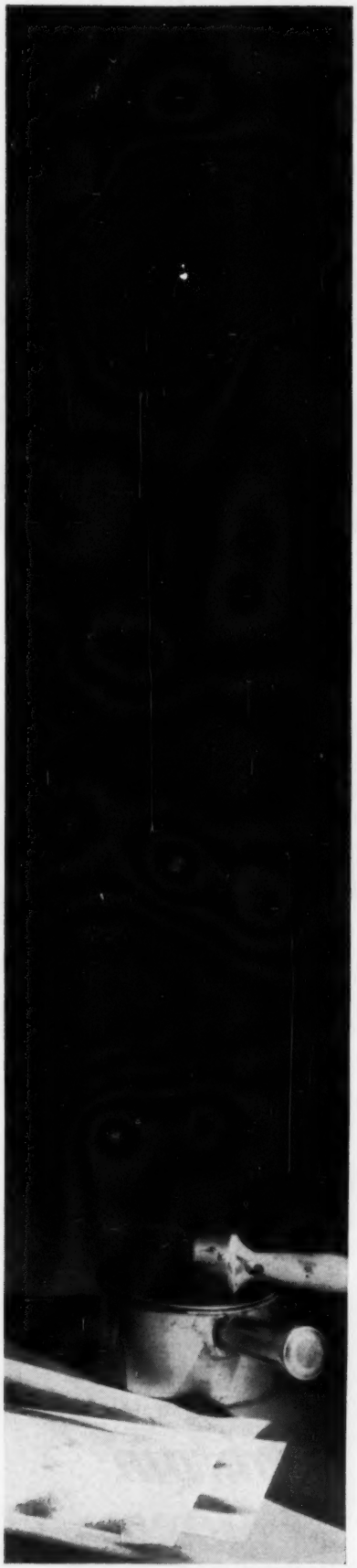


YOU GET THE SAME QUALITY SHIPPING CONTAINERS FROM EVERY MEAD CONTAINER PLANT!

Behind every Mead corrugated shipping container is a solid, multi-plant organization reinforced by an integrated source of top quality containerboard. This assures you of a steady and dependable supply of containers, regardless of size, shape or design.

With years of research in the highly technical and related problems of product protection, materials handling and container construction, each individual Mead Container Plant offers you the combined skills and knowledge of all our plants.

Furthermore, comprehensive design and engineering services, fast processing of orders and quick deliveries are other reasons why it will pay you to have one of our representatives present to you the advantages of using Mead's shipping containers and display-shippers.

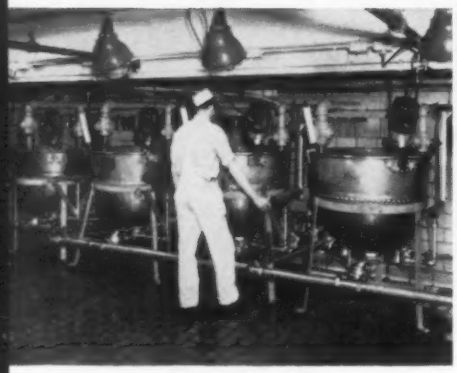
MEAD *containers*

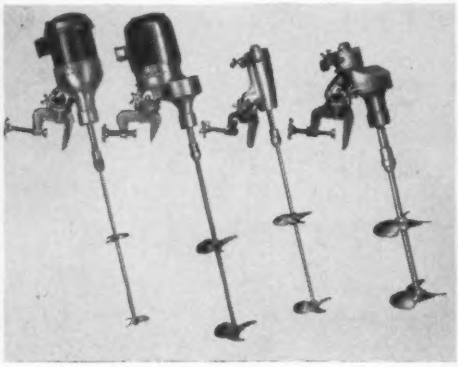
MEAD CONTAINERS, INC.
Subsidiary of
THE MEAD CORPORATION
Executive Offices, Cincinnati
National Sales Offices, 230 Park Avenue, New York 17, N. Y. • 5875 North Lincoln Avenue, Chicago 45, Illinois and in principal cities

For more data, circle this page number on card at back →

How to choose a portable mixer

To get your money's worth, ask yourself these questions

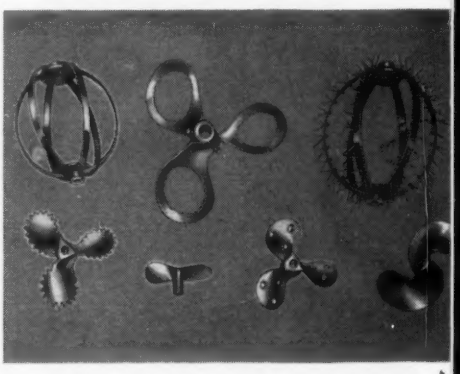




1. Will it mix my materials efficiently? There's one easy way to be sure your mixer will combine fluid flow and turbulence in optimum proportions for good mixing. Specify a LIGHTNIN Portable Mixer! Every LIGHTNIN is guaranteed—unconditionally—to do the job right.

2. How much choice do I have? With LIGHTNINS, you can choose from *thirty* standard portables, ⅛ to 3 HP. Your choice of direct or gear drive; electric or air motor. Shafts and propellers in all alloys and coverings. Whatever the job, there's a LIGHTNIN to handle it.

3. Is the motor right for my conditions? You're assured of correct motor application if you specify LIGHTNINS. All enclosures (open, totally enclosed, Class 1, Group D, explosion-proof) and all standard current specifications—and many non-standards—are carried in stock.



4. How is the shaft supported? Is the mixer built to protect the motor against the strain of radial shaft loads? You'll find this vital safeguard in LIGHTNINS. An extra ball bearing here steadies the shaft for true running—protects the motor from radial shaft loads.

5. What about adjustability? You can quickly swing a LIGHTNIN Portable to any angle for the exact kind of mixing you want—slow roll, vortex, or rapid top-to-bottom turnover. Universal ball-and-socket clamp tightens without wrenches—stays tight.

6. Can I meet special requirements with it? You get widest latitude for matching *any* need with LIGHTNINS. Full range of propeller designs for any special or unusual mixing job; alternative mountings for permanent or semi-permanent use.

7. Where can I get prompt service on fluid mixing? Just call your LIGHTNIN Mixer representative. He can quickly give you a *guaranteed* recommendation. And he's near you—look him up in Thomas' Register or the yellow section of your telephone directory. Or write us direct.

WHAT SIZE AND TYPE of mixer do you need? Check here for latest bulletins giving full description, packed with helpful facts on mixing:

- ☐ Turbine, paddle, propeller types; top or bottom entering: 1 to 500 HP (B-102)
- ☐ Propeller types; top entering: ¼ to 3 HP (B-103)
- ☐ Portable: ⅛ to 3 HP (B-108)
- ☐ Side entering: 1 to 25 HP (B-104)
- ☐ Laboratory and small-batch production types (B-112)
- ☐ Condensed catalog showing all types (B-109)
- ☐ Quick-change rotary mechanical seals for pressure and vacuum mixing (B-111)
- ☐ Data sheet for figuring mixer requirements (B-107)

Check, clip, and mail with your name, title, company address to:

MIXING EQUIPMENT Co., Inc., 143-d Mt. Read Blvd., Rochester 11, N.Y.

In Canada: Greey Mixing Equipment, Ltd., 100 Miranda Ave., Toronto 10, Ont.

Lightnin® Mixers

MIXCO fluid mixing specialists

DEVELOPMENTS TO WATCH

SPECIAL
FOOD
ENGINEERING
SERVICE to
EXECUTIVES

Ten-M clubs created among Pillsbury employees are thinking up ways to increase sales by $10 million over '58 forecast. Executives head groups. Hundreds of ideas are said to have been generated in 6 mo.

A profit-planning committee for each product has been organized by Green Giant. Purpose is intensive study of short and long-term planning, sales, production, finances, advertising costs, plants, areas, and prices.

Possibility of using nuclear bombs to create huge natural reservoirs for irrigating arid areas is under study by government agencies. If technique should be successful, food-growing acreage could be increased.

New antibiotic effective against fungi has been discovered at University College of Technology, Calcutta. It contains seven amino acids.

Publicity to effect that milk causes kidney stone formation was misleading. It emanated from Yale, where students were cautioned not to engage in milk-drinking sprees (quarts at one sitting), according to National Dairy Council. A glass of milk at a meal is not frowned upon.

Sorbic acid shows great promise as a mold inhibitor for meats, according to a Pfizer scientist. It appears to be useful in protecting fresh and smoked sausages, luncheon meats, ham, bacon, and even hamburgers.

Multi-wall bags that withstand heavy abuse in handling are expected to be made from new stretchable paper invented by Sanford Cluett, the creator of "Sanforizing". Fibers are bunched together during processing.

Polymer-coated 300-gage cellophane has been introduced by Du Pont. Film has luster, is greaseproof, has good gas and water vapor impermeability, performs well on high-speed machines, is economical.

Brief tempering by heat treatment raises melting point of cocoa butter and some other confectionery fats, NCA research reveals. Major components of fats have been synthesized at USDA's southern research lab.

Handling costs, breakage, and pilferage have been reduced in export shipments of beer by Lowenbrau brewery, Munich. Shipping time to New York is cut 4 days. Cases are packed in a 17x8x7-ft. unit container.

Agitation of retorted cans of blueberries during cooling prevents clumping of berries in the can, USDA has discovered. Cause of sticking is melting of waxy substance on berries, which then acts as adhesive.

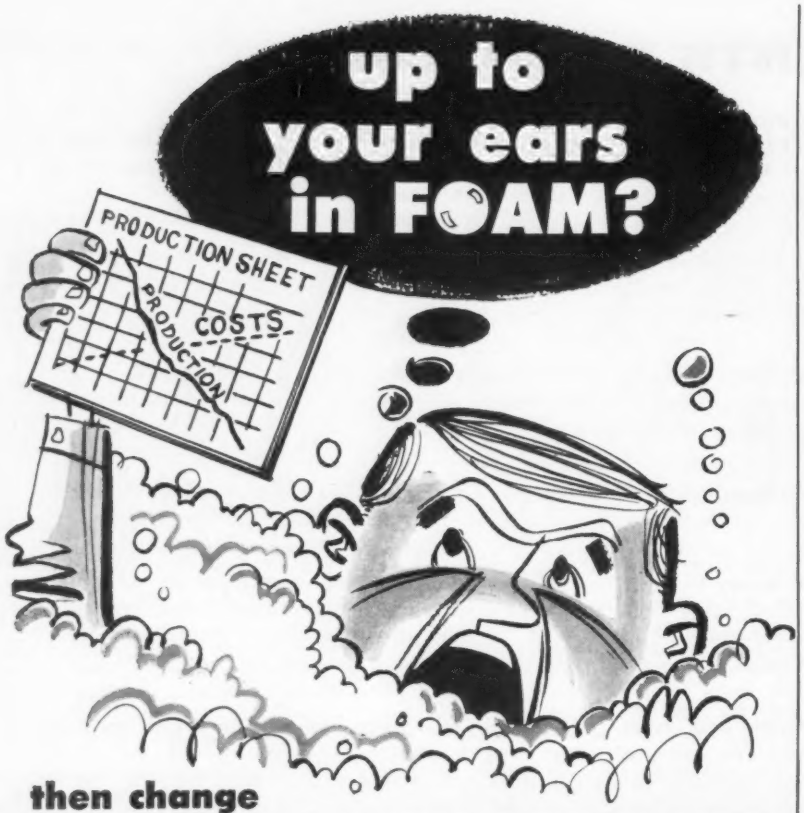
See Washington Report p. 27

Chill haze and off-flavor of beer stored too long, or exposed to sunlight, is reduced by adding polyvinylpyrolidone. Savings in filtering and enzymes are claimed.

Super-quick freezing with liquefied gases may permit tomatoes and salad greens to be frozen successfully. Produce spoilage might be eliminated.

Potato chips may be packaged 100% faster by application of filling method developed by Dan Dee chip firm to Transwrap unit, Package Machinery reports.

SEE NEXT PAGE →



then change to a Dow Corning SILICONE DEFOAMER

In processing nonstandardized foods—
Antifoam A Compound—permissible at concentrations to 10 ppm.
Antifoam AF Emulsion—permissible at concentrations to 34 ppm.

Examples—
1 ounce Antifoam A kills foam in—
20,833 lb chewing gum base

1 ounce Antifoam AF kills foam in—
15,625 lb dill pickling solution

FREE SAMPLE
Make your own test. Use coupon below or write on your letterhead to receive a trial sample. No obligation, of course.

first in silicones

Dow Corning CORPORATION
MIDLAND, MICHIGAN

554
NAME
TITLE
COMPANY
CITY ZONE STATE

My foamer is
Oil system
Aqueous system
Other

Developments to Watch

Processing by Growers Climbs As Co-op Acquires Canneries

New evidence of the rising role of grower co-ops is the striking coup just engineered by California Canners & Growers.

This organization has now taken over two large canning companies—making it the fourth biggest canner in the state, to the tune of $50 million worth of business a year.

For a parallel in the meat field, there's word that a co-op-type organization is projected for Iowa's hog farmers, with plans included for a $5 million hog-processing plant.

The California canneries acquired by the co-op are Richmond-Chase, San Jose, and Filice & Perrelli Canning Co., Richmond. Former packs both fruits and vegetables. Besides its private-label business, it sells under the "Heart's Delight" and "Diet Delight" labels. Latter also has a large line, under both F&P and private labels, for retail and institutional outlets.

"Advantage to the canner," says E. N. Richmond, of R-C, "is assurance of a full supply of produce. Our firm," he continues, "recognizes a trend toward cooperative integration in the canning field."

Adds F&P President G. A. Filice, Sr.: "This integration of growing and processing will help bring the greater stability that is long overdue."

Acquisition of still other processing operations is planned.

Cal-Can only came into being last Fall. Under major sponsorship of the California Canning Peach Assn., it quickly attracted growers of pears, apricots, tomatoes, and asparagus to its standard. Headquarters are in San Francisco.

Concentrates Make Fine Jellies

Fruit-juice concentrates—rather than single-strength juices—are used in a new jelly-making method that is cited for its economies and improved quality control.

A continuous process, the special technique has been worked out at WURDD, Albany, Calif. The researchers had been seeking a worthy new use of concentrates.

Called for is a pumping together, in a mixing pipe, of measured amounts of cold fruit-juice concentrate, cold pectin solution, and hot sugar syrup—to make jelly continuously. Resulting have been good

(*Continued on p.* 21)

How new LINK-BELT screw conveyor components

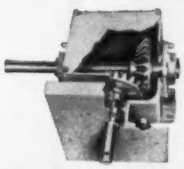
reduce power demands and maintenance delays

BALL BEARING HANGER has self-aligning bearing and seal—adjusts to suit shaft deflection. Square tube member of frame is positioned to permit easy passage of materials.

QUIK-LINK CONVEYOR SCREW. For ease in removal of conveyor section without dismantling other components. Feature can be furnished on Helicoid and Sectional Flight Conveyors.

TROUGH END SEAL assembled between flange block and trough end plate, keeps grease in, dirt out. Used with lip, felt or waste packing seal to prevent bearing-product contact.

DOUBLE BALL BEARING Flange Block employs two Link-Belt precision ball bearings spaced to withstand overhung load at drive end and take thrust loads of screw in either direction.



BALL AND ROLLER BEARING COUNTERSHAFT END. For drives at right angles to screw conveyor or common drive for two conveyors intersecting at right angles—absorbs thrust.

Complete line of accessories can be installed on new or existing systems

THOUGH just recently introduced, these Link-Belt screw conveyor components have already achieved a wide acceptance. Throughout industry, they're cutting power and maintenance demands to a new low.

Design refinements include the Quik-Link conveyor screw that makes removal of conveyor section possible without dismantling other components. Starting and running friction is reduced through the use of Link-Belt ball bearing hangers, as well as new ball bearing trough ends. Trough ends can be furnished with seals to protect bearings—seals are rabbetted for perfect bearing alignment.

For facts, call your nearby Link-Belt office or authorized stock-carrying distributor. Or write for Folder 2489.

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World.

LINK-BELT

14,782

SCREW CONVEYORS

For more data, circle this page number on card at back →

Safeguard Food against Mold and Yeast Spoilage with SORBISTAT®

Here's a promise of new protection for a wide variety of food products. Extensive tests have proved that Pfizer SORBISTAT (sorbic acid) selectively inhibits the growth of many molds, yeasts and certain bacteria which cause spoilage.

Cheese and cheese products, prepared gelatin, fruit, vegetable, and other salads, and fruit cake are some of the foods for which sorbic acid protection has been evaluated and found effective. The protective value of sorbic acid in pickles, soft drinks, pie fillings, and chocolate syrup is now being carefully analyzed. Reports indicate that in certain cases, sorbic acid is several times as effective as other antimycotic agents now in use.

Most important, since SORBISTAT is a selective growth inhibitor of yeasts and molds, it does not interfere with the normal microbiological curing of cheeses. At normally effective use levels SORBISTAT does not affect the appearance, taste or odor of any food product. It is a stable, easily stored, white crystalline powder that's added to foods as a powder or as an easily prepared solution.

Discover for yourself how SORBISTAT can keep your foods in better condition... and your customers better satisfied! Write for technical literature and sample today.

Quality Ingredients for the Food Industry for Over a Century

Pfizer

CHAS. PFIZER & CO., INC.
Chemical Sales Division
630 Flushing Ave., Brooklyn 6, N. Y.

Branch Offices: Chicago, Ill.; San Francisco, Calif.; Vernon, Calif.; Atlanta, Ga.; Dallas, Tex.

Photo courtesy of Economics Laboratories, Inc.

After you buy a Clark truck . . . what then?

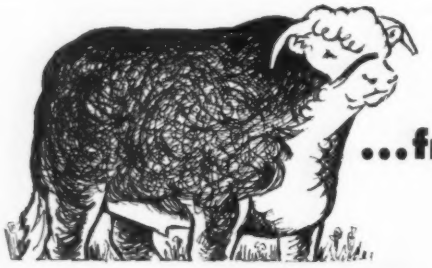
Almost more important than your original truck purchase is the service you get *after* delivery. Quality of the truck is taken for granted. What you're interested in is *keeping* the equipment on the job and keeping maintenance costs down. It's why competent local service is so important.

If you are already a Clark user, you know the service your local Clark dealer supplies is fast, dependable and economical. You know, too, that his service extends to such things as improving equipment utilization, safety programs for your employees, and a number of other services designed for your specific benefit. If you would like *full* details on the many special aids available, write to: Local Service, Clark Equipment Co., Battle Creek, Michigan.

CLARK® EQUIPMENT

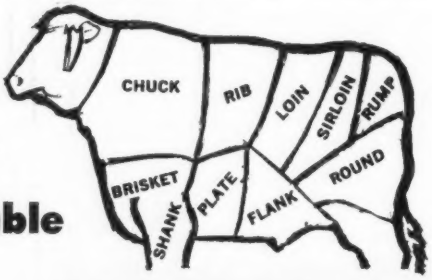
Printed in U. S. A.

GREAT PRODUCTS MADE GREATER WITH **"hi-Spec"** GALVANIZING



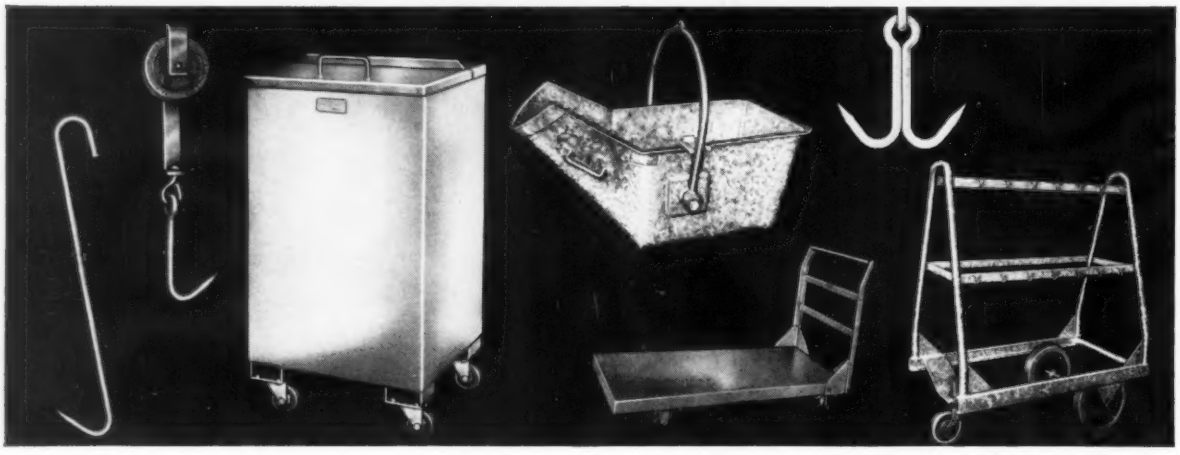
...from the hoof

...to the table



ST. JOHN & CO. INSURES 100% CLEANLINESS

and the minimum of maintenance WITH "hi-Spec" GALVANIZING



Contamination, discoloration and taint of any kind must be guarded against at all times in the processing of meat.

This means that all the equipment used in the long process from "the hoof to the table" must have maximum protection against corrosive animal fluids and strong alkaline cleaning solutions.

Trouble free maintenance and long life is built into St. John and Company Products because they specify "hi-Spec" galvanizing – the process that provides a thicker rustproof coating than is called for in Federal, Mill or even ASTM specifications.

"hi-Spec" galvanizing flows evenly over all the surfaces, forming smooth fillets that eliminate hard-to-clean corners and means longer life for the equipment and cleaner food products.

The Metal Coating Corporation is proud of the part "hi-Spec" galvanizing plays in making St. John equipment a leader in the food processing and meat packing fields.

MAKE YOUR PRODUCT GREATER

WITH **"hi-Spec"** GALVANIZING

EXCLUSIVE PROCESS OF

AMERICA'S FOREMOST QUALITY GALVANIZER

Metal Coating Corporation

FRontier 6-3800

1215 West 37th Street, Chicago 9, Illinois

Dispels Dairy Paperwork

This data-tape perforator is a key unit in machine system (Burroughs) that's now curing accounting headaches of medium and small dairies. Displaying it is Donald Moore, head of dairy division of Capital Business Service, Lansing, Mich., which operates 150 offices coast-to-coast. Subscribing dairy's routine sales data is transcribed by Capital to punched tape, which is then processed into complete analyses. Dairy gets back concise, accurate daily sales reports. Periodic route summaries and individual-product tabulations are also supplied.

CONCENTRATE JELLIES (Cont'd)

products (in several flavors) having fine color and taste, undamaged by long cooking. It isn't necessary to heat the jelly higher than the 180F. required to pasteurize the product.

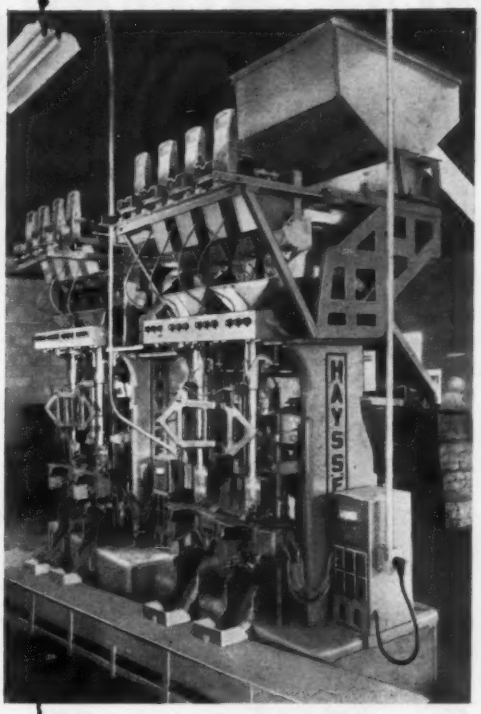
Natural juice and flavor concentrates can be frozen and shipped to jelly makers at considerable savings in storage and shipping charges. Further, they can be depectinized and clarified to give a superior product.

BRIEFLY

• MANAGEMENT PHASES of Florida State U.'s Baking Science & Management program are particularly practical—due to active participation by national baking business leaders. Both operational and administrative executives visit for several days, meet with classes, and take part in seminars. This gives students vital first-hand knowledge

COMPAK

high-production "Poly" Packaging continues to set new records for performance and economy!



Gressinger & Sons have produced over 25,000,000 perfect Polyethylene packages of radishes in one year's time on these two Hayssen COMPAK machines.

Visit us in booth 1224, AMA Packaging Show, New York City, May 26-30

● No other packaging machine on the market can boast this record of production and dependability with polyethylene.

Whatever your product; solid, liquid or powder, we can produce a better package at less cost.

The simplified machine principle of COMPAK has made it first choice in every industry where perfect design register, accuracy and a true hermetically sealed package is necessary.

Let our experienced packaging engineers help you with your polyethylene packaging problems. Contact us TODAY and see how easily COMPAK fits into your operation.

HAYSSEN

MANUFACTURING COMPANY • Dept. FE-4 • SHEBOYGAN, WIS.

first in Automatic Packaging Since 1910

Albany • Atlanta • Chicago • Dallas • Denver • Detroit • Houston • Jackson, Miss.
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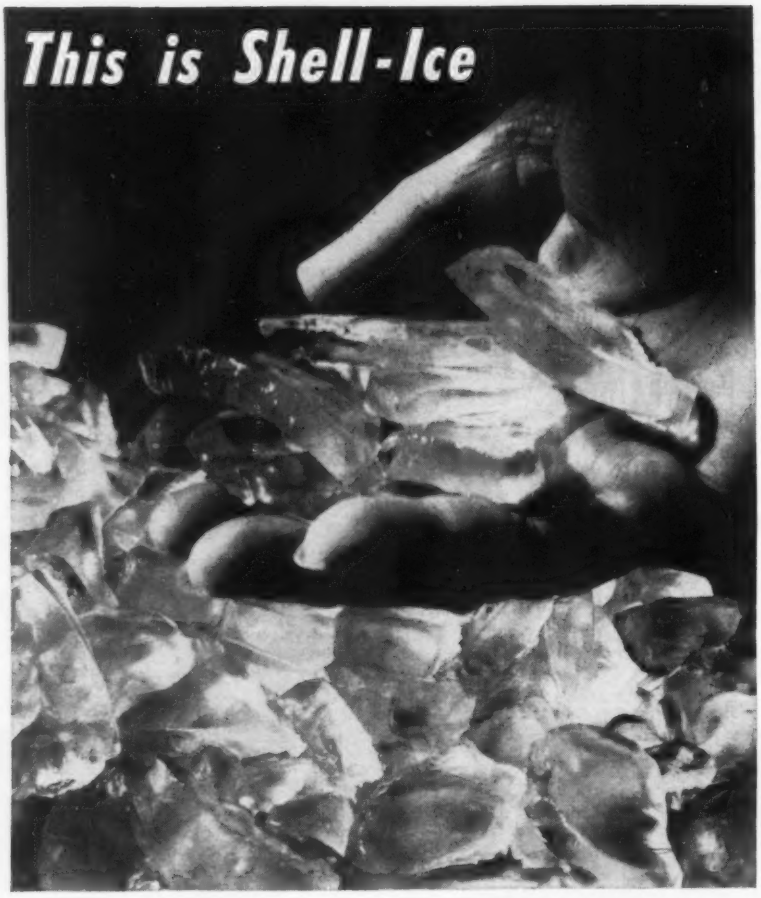

Shell-Ice Maker of Size 11—29 tons per 24 hours. Note double rows of tubes.

CLEAR . . . SOLID . . . COLD . . . and with rounded edges

Frick Shell-Ice is the natural preference of poultrymen, fishermen, shippers, ice men, and dairymen.

Frozen and harvested, in a thickness of 1/8" to 1/2", without labor or special cleaning, Shell-Ice will save you time and money. Get the whole Shell-Ice story now: ask for Bulletin 54.

Write to:

DEPENDABLE REFRIGERATION SINCE 1882
FRICK CO.
WAYNESBORO, PENNA., U. S. A.

Developments to Watch

of actual commercial methods, as well as valuable contacts with working experts.

• A UNIVAC 'electronic brain' has been leased for blanket use of the various tenant firms of Westbury Industrial Park, Long Island. Thus, companies now get lightning service on their payroll, sales analysis, inventory and production-control.

• FISH & CHIPS, national English dish, is about to be exported to U. S. by Britain's Eskimo Foods Ltd. Item combines 3-oz. portions of filleted fish and chip (French fry) potatoes. They're quick frozen.

Schedule of Events

April

17-18—American Dry Milk Institute, annual meeting; Edgewater Beach Hotel, Chicago.
19-22—National Independent Meat Packers Assn., annual meeting; Palmer House, Chicago.
20-23—National Fisheries Institute, annual meeting; Sheraton-Palace Hotel, San Francisco.
20-23—Grocery Distribution Exposition; Kiel Auditorium, St. Louis.
21—National Soft Wheat Millers Assn., annual meeting, Shoreham Hotel, Wash., D. C.
21-23—Millers' National Federation, annual convention; Shoreham Hotel, Wash., D. C.
21-23—American Oil Chemists' Society, annual spring meeting; Peabody Hotel, Memphis, Tenn.
22-24—Food & Container Institute, Research & Development Assn., annual meeting; Palmer House, Chicago.
23-25—Pennsylvania Mfg. Confectioners' Assn., annual production conference; Franklin & Marshall College, Lancaster, Pa.
23-26—National Bakery Suppliers Assn., annual convention, Plaza Hotel, New York City.
23-27—Festival of Foods; Coliseum, New York City.

May

4- 8—American Society of Brewing Chemists, annual convention; Sheraton-Cadillac Hotel, Detroit.
11-14—Processed Apples Institute, annual meeting; Seaview Country Club, Absecon, N. J.
12-14—Instrument Society of America, instrumentation symposium; Shamrock Hilton Hotel, Houston, Tex.
12-14—Biscuit & Cracker Mfrs. Assn. and Biscuit Bakers Institute, joint annual meeting; Edgewater Beach Hotel, Chicago.
18-21—Flavoring Extract Mfrs. Assn., annual convention; Edgewater Beach Hotel, Chicago.
25-28—Super Market Institute, annual conference & exhibit; Convention Hall, Atlantic City.
25-29—Institute of Food Technologists, annual convention & exhibit; Palmer House, Chicago.
26-30—National Packaging Exposition, American Management Assn.; Coliseum, New York City.

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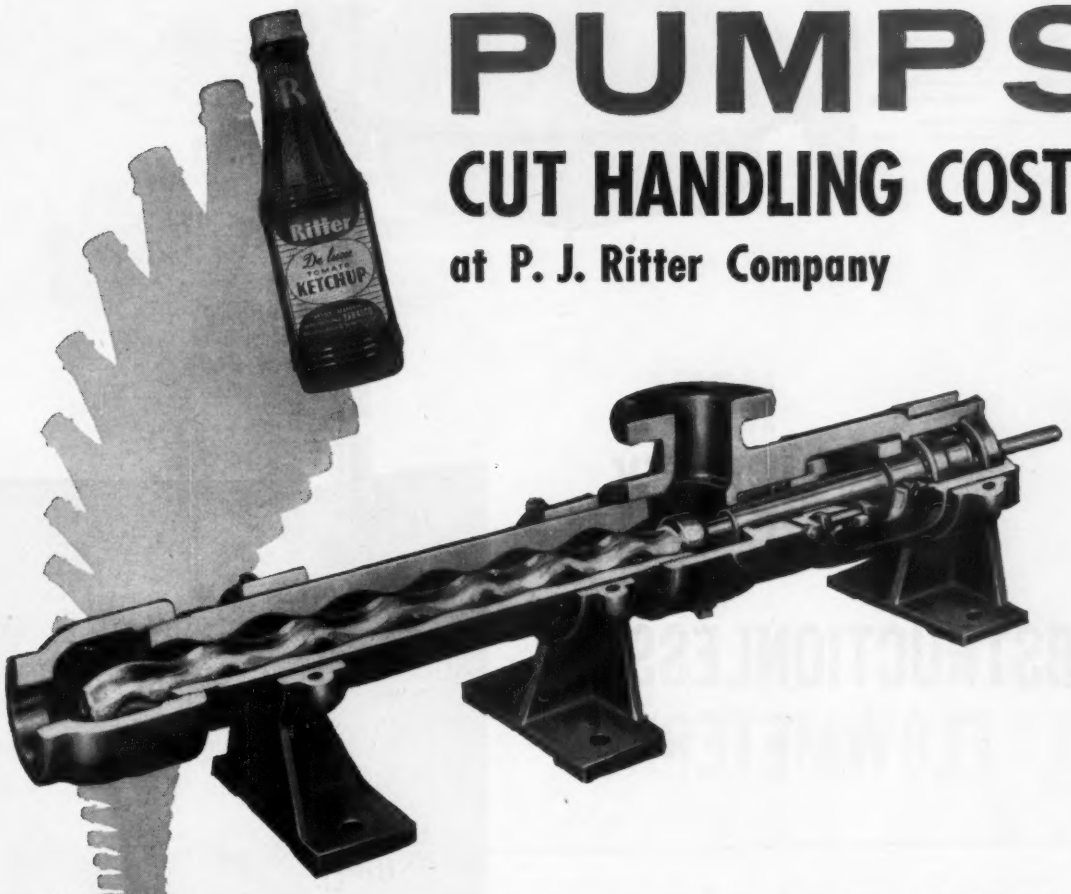
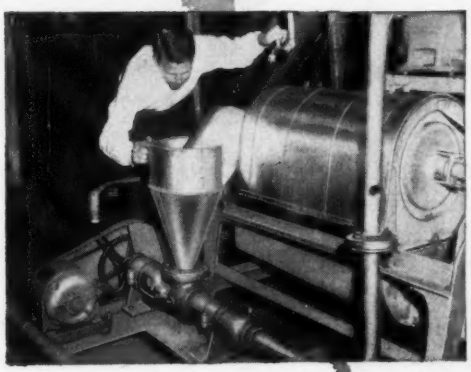
MOYNO® PUMPS

CUT HANDLING COSTS

at P. J. Ritter Company



...pumping tomato seeds and 5-15% water



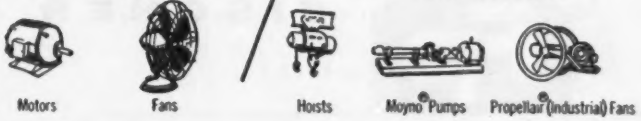
The Moyno "progressive cavity" pumping principle has enabled thousands of plants to pipe difficult materials that were transported by hand and other expensive means. For example, The P. J. Ritter Co., famous food packers since 1854, have increased efficiency by installing seventeen Moyno Pumps. The one shown at the left is pumping tomato seeds in 5-15% solution at 10 gallons per minute. The pump runs at 600 RPM.

Moyno is the only pump that will handle many difficult materials such as abrasives, pastes, slurries, chemicals, foods, suspended solids, etc., without foaming, aerating, crushing or excessive pump wear.

Examine your processing methods. No doubt there are several places where Moyno Pumps can drastically cut costs. Ask us, we'll give you a prompt answer. Send us an outline of your problem today! Write for Bulletin 30-FE.

ROBBINS & MYERS, INC.

SPRINGFIELD, OHIO | BRANTFORD, ONTARIO



Motors | Fans | Hoists | Moyno® Pumps | Propellair® (Industrial) Fans

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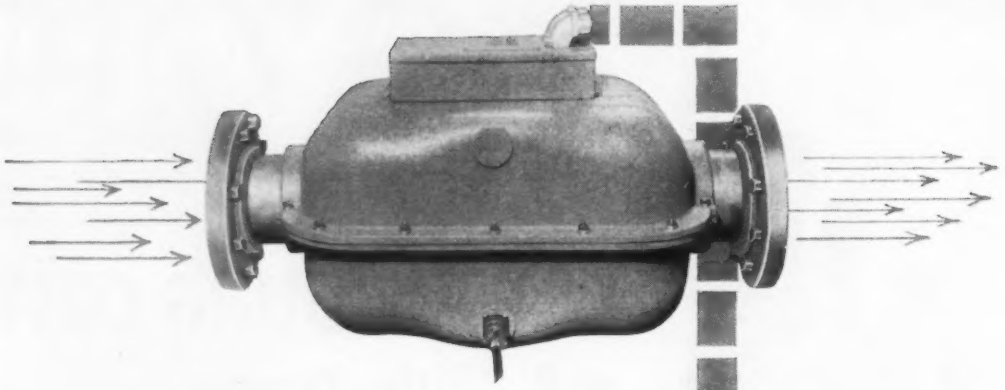
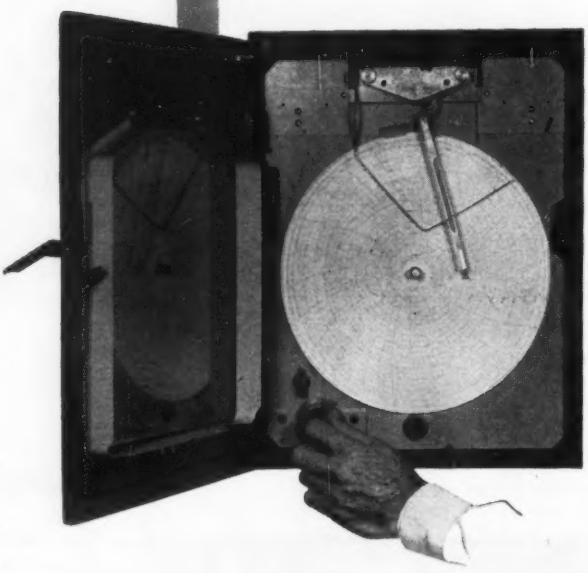


NEW FLEXIBILITY IN OBSTRUCTIONLESS FLOWMETERING



The F & P Magnetic Flowmeter design lets you set any desired flow value *at full scale* . . . permits *utilization of the full receiver range.* Maximum flow can be set at any value from 1 foot per second to 30 feet per second . . . *at the turn of a dial!* This unique feature *is standard with every F & P Magnetic Flowmeter.* There's no extra charge, no complicated modifications.

Available in pipe sizes from ½" and up, these flowmeters—plus the new F & P potentiometer-type indicator/recorder—comprise a metering system which permits interchangeability of any primary with any indicator/recorder. All types of standard secondary instrumentation—integration, control, retransmission—can be supplied in the recorder case.

You'll find that it's easy to substitute F & P Magnetic Flowmeters directly in existing flow-control or ratio-control systems. Get in touch with the F & P field engineer nearest you, and write for Catalog 10D1416. Fischer & Porter Company, 3348 County Line Road, Hatboro, Pa. In Canada, write Fischer & Porter (Canada) Ltd., 2700 Jane St., Toronto, Ont.

FP

FISCHER & PORTER CO.

Complete Process Instrumentation

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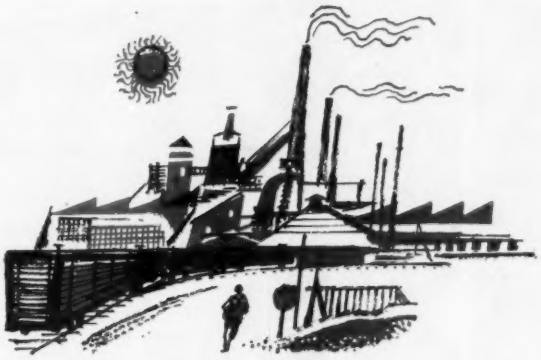

No matter where you are . . .

With Morton, you need only one salt supplier

There's no need to complicate your bookkeeping, risk shipping delays and quality differences just for the sake of having two salt suppliers. There's really no "safety factor" in it, either. For plant managers and purchasing agents in every field of industry are finding that it pays to buy all their salt from one supplier—Morton. It not only assures you salt of uniform quality, but Morton, the only nation-wide salt company, offers you many advantages you just can't get elsewhere.

Service in 48 states. Only Morton has 9 salt plants, warehouses and sales offices from coast to coast. This means Morton can offer you complete salt service whether you have just one plant or several plants in different states.

Any kind of salt you need. Morton produces, refines and delivers nearly 100 different grades of salt to industry for 14,000 different uses. This means you can get expert, *impartial* advice on which grade or grades will do the best job for you.

Dependable delivery. Because Morton has mines, wells, and solar ponds in more than one location, Morton is better equipped to make delivery from alternate plants even under adverse economic or other conditions that might endanger your plant's continuous operation.

Complete technical assistance. Morton backs its salesmen with the services of its salt research laboratory, the most complete laboratory of its kind in the world. While your Morton salesman can help you solve many of your salt problems—everything from recommending a different grade of salt to helping you plan a water-softening system or put in or modernize a brine installation—he can refer problems he personally can't solve to a Morton field specialist for quick, thorough analysis.

We think you'll find it well worth while to order all your salt from Morton. For complete information, write:

MORTON SALT COMPANY
INDUSTRIAL DIVISION
Dept. FE 4-58, 120 So. LaSalle Street,
Chicago 3, Illinois

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NEW MACK MODEL N

. . . the only C. O. E. with all these profit-boosting features

- Choice of Mack engines — gasoline, diesel or turbo-charged diesel — from 150 to 205 h.p.
- Tilt-cab action for full engine accessibility
- Truck and tractor models
- Low step-height for easy entry-exit . . . flat floor (on 40 series) for swift exits from either door
- Mack Air Shift with effortless lever throws in conventional shifting pattern
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The sooner these handsome, compact, efficient new Macks swing into action for you, the sooner you'll start to realize their tremendous profit-potential . . . their bonus cargo capacity . . . their swift mobility in congested areas . . . their strength, stamina and dependability. They're Macks from the word "Go!" Check your Mack branch or distributor. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

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MACK *first name for* **TRUCKS**

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Margarine 'Yellow' Again Under Fire

Once more, a bead is being drawn on the 'yellow' in margarine—a 3-day hearing having pinpointed FDA's proposal to classify synthetic carotene as a coal-tar color requiring FDA certification.

For years, the agency has let the popular yellow food dye go unquestioned. But it now gets the eye as moves are made to bar food use of FD&C Yellows Nos. 1, 2, 3, and 4, the coal-tar competitors of synthetic carotene.

With the carotene under certification, margarine makers, and other users, would have to label their products as containing a coal-tar dye. This is opposed both by the producer (Hoffman-La Roche) and the margarine people, since the synthetic is actually built up from a natural product, not coal tar. They fear customers will be frightened off by such labeling.

FDA's stand, backed by coal-tar color makers, is that this carotene "falls within the definition," since it can be produced from coal tar. It's contended that the molecules are indistinguishable.

Behind all this is FDA's long-standing "per se doctrine" directed against coal-tar colors—as suspect on toxicity, even when amounts used are nowhere near specific harmful levels.

This doctrine is about to face a showdown. For in late March the Supreme Court declared that it would weigh FDA's appeal that it over-rule a circuit court decision (won by orange growers in respect to FD&C Red No. 32). Move here is toward the setting of tolerances permitting use of coal-tar colors found toxic only under extreme test conditions.

Additive Hearings Re-Slated

Those hearings relative to additive legislation — crowded off the calendar by Congressional finger-pointing involving a Miami TV license—are now rescheduled for April 15-16.

The proceedings will be limited to those two days. And presumably they won't carry into either afternoon, though not starting until 10 A.M.

Apparently, it's still the Congressional Committee's specific intention to restrict the appearances—hearing only the HEW Assistant Secretary, the FDA Commissioner, and but two very brief statements from industry.

Zero Hour for Trade Act Bill

Any day now, the Reciprocal Trade Act Extension bill is expected to reach the House floor. And it's evident that much depends on just how the bill is reported to the floor.

If it comes up "closed rule," it can't be tampered with—must be passed, defeated, or returned to the committee.

If, however, it's "open rule," then protectionists will try to amend it on the floor.

There are three key kinds of amendments to watch: First, procedural changes, aimed at reducing the President's tariff-negotiating power and strengthening Congress' hand in setting rates and quotas. Second is the tacking on of specific commodity quotas. And third are proposals to set up a federal trade adjustment board to administer Government loans, tax benefits, and unemployment pay to companies and workers who can prove injury from import competition.

The bill should pass without much trouble if there are enough such amendments to satisfy the protectionists—or if the Administration satisfies these groups, outside the bill's scope, with executive tariff boosts.

But if neither of these two conditions is met, the bill may be killed.

C&B, Lucky Lager Targeted

Latest legal imbroglios affecting food firms are an FTC hearing examiner's ruling against Crosse & Blackwell Co. and a Department of Justice suit versus Lucky Lager Brewing Co.

C&B is termed guilty of paying promotional allowances to Food Fair Stores and Giant Food Shopping Center, while not so favoring others. Thus, C&B joins ten other food companies accused by FTC of granting illegal allowances to these chains.

This ties in with the "meat packer" definition squabble. Food Fair appears to rate as a packer, but Giant doesn't, and so comes under FTC jurisdiction.

Meanwhile, C&B contends it, too, is a packer—but FTC hasn't "bought" this argument. C&B obviously intends to take its case to the courts.

In the case of Lucky Lager, violation of the Clayton Antitrust Act is charged. Cited as the misstep is the San Francisco brewer's acquisition of Fisher Brewing Co. of Salt Lake City.

The court is asked to direct LL to divest itself of all Fisher interests. Bearing on the case is Fisher's suit against Lucky Lager in '56, alleging it was selling its beer under cost in Utah to kill off competition.

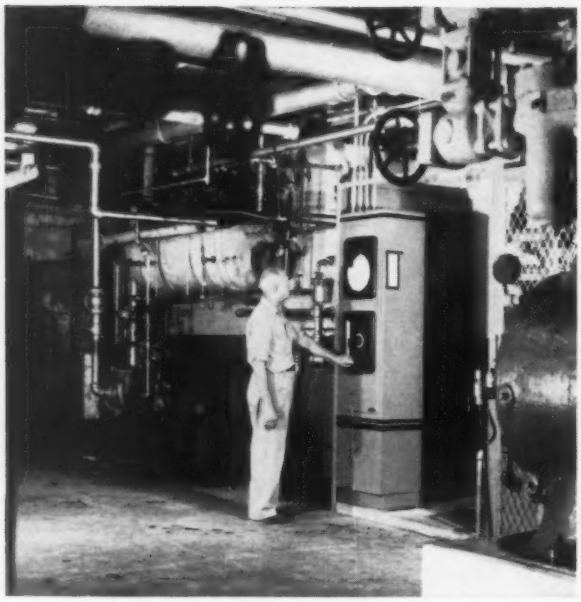
Lucky Lager lost and was assessed about $1 million in damages and costs. Later, its contract to buy Fisher called for payment of some $200,000 to settle the suit.

BRIEFS

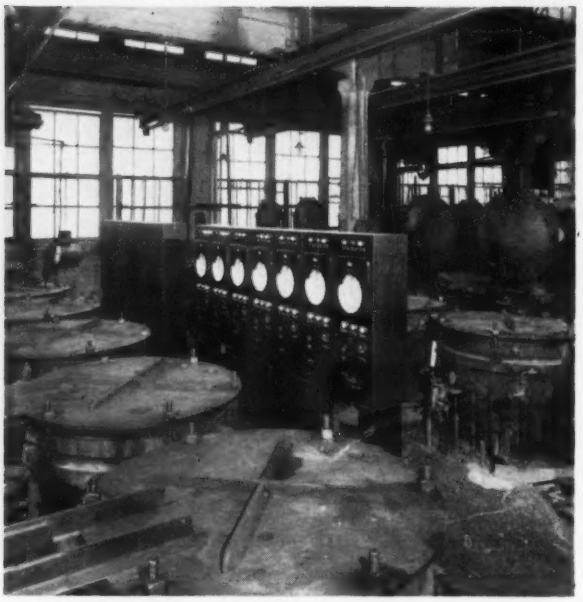
Stream-polluting food processors are now under PHS guns. The Service is calling on city authorities and polluters in Nebraska, Iowa, and Missouri, and thus sparking the building of municipal treatment plants partly financed by the responsible companies. The plan works—because under the new Water Pollution Control Act polluters might be compelled to construct more costly facilities of their own.

Up-pricing of frozens on the "excuse" of the recent cold waves in producing areas will be targeted in hearings by the House Agricultural Consumers Study Subcommittee, declares Chairman Victor Anfuso (D., N. Y.). An eye will be out, he says, for price-fixing.

Residues of the insecticide malathion are not acceptable in milk, rules FDA. This decision parallels the recent similar thumbs-down on methoxychlor spray.



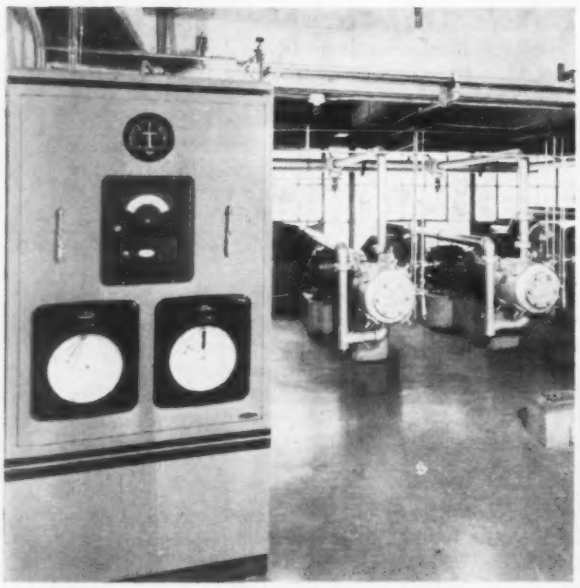
CHOCOLATE COMPANY – NEW ENGLAND Foxboro centralized 2-unit cabinet contains Dynalog Electronic Recorder and multi-point switching unit, permitting 24 different temperature measurements to be recorded on a single chart. **2-, 4-, or 6-instrument cabinets** can be installed individually or in combination — provide complete centralized control of any food process, large or small.



FOOD PACKER – INDIANA Fully automatic control of seven retorts is easily handled from this centrally-located panel. This integrated control system, specifically designed for the process by Foxboro, results in easier, more efficient operation. **Grouping of instruments** makes routine maintenance a simple job. Heavy gauge, dust-tight steel panels protect instruments and accessories from bumps, knocks, and corrosive atmospheres.

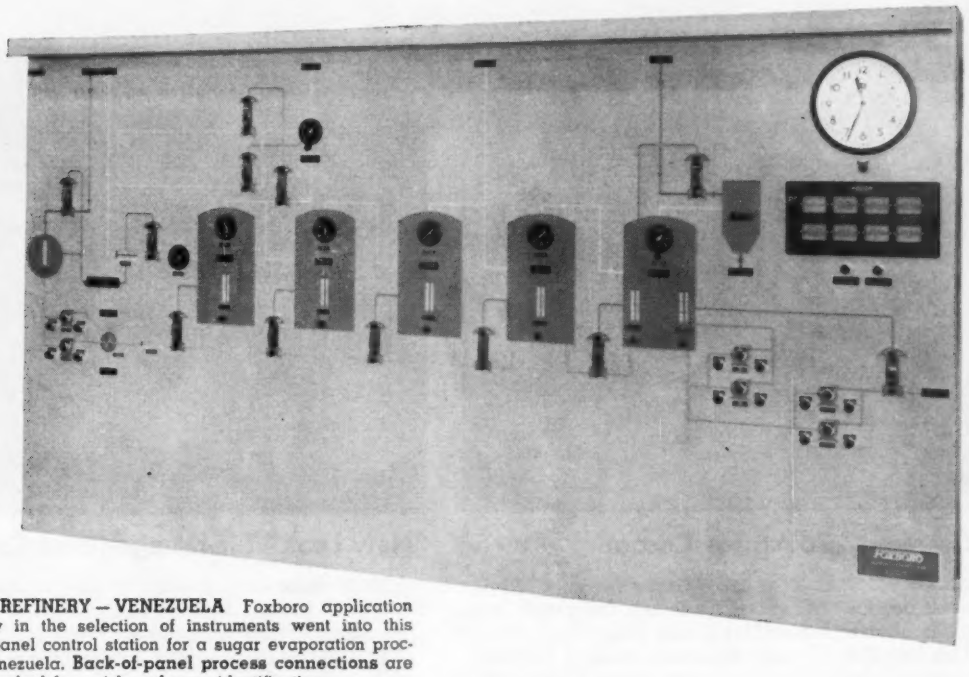
For any food plant –

– an integrated Foxboro



BREWERY – LOS ANGELES Foxboro packaged system controls pH of treated water. **Full length doors** at rear of cabinet allow easy access to all interior components. Accessories are rigidly and neatly mounted . . . yet are completely accessible. All wiring, open terminals, and contacts are fully enclosed and protected.

BREWERY IN MEXICO Complete Foxboro centralized control system simplifies operation of rice and mash cookers, hot and cold water tanks, lauter tubs, and brew kettles. **Air tubing** is neatly formed and fitted to permit easier servicing and maintenance. System was designed and assembled in Foxboro, Mass. — shipped in sections for installation in Mexico.



SUGAR REFINERY — VENEZUELA Foxboro application know-how in the selection of instruments went into this graphic panel control station for a sugar evaporation process in Venezuela. **Back-of-panel process connections** are plainly marked for quick and easy identification.

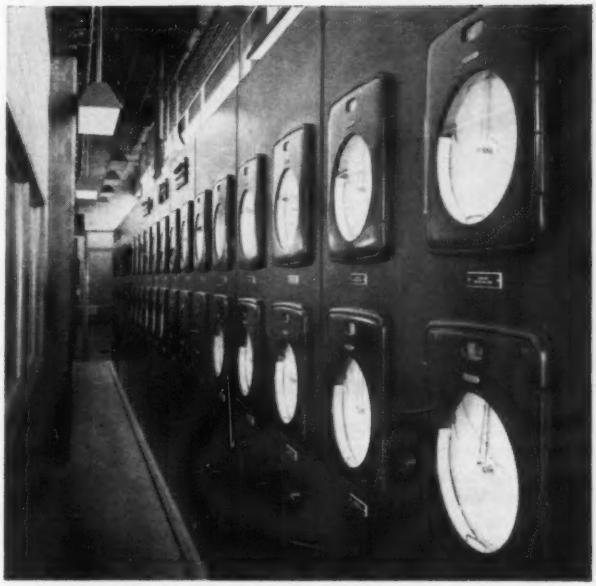
for every food process

Packaged Control System

Complete packaged control systems providing centralized operation from one convenient location! It's the trend that's streamlining the efficiency of many food plants today.

Foxboro custom-engineered packaged control systems make it easy. Years of application engineering experience insure that instruments are exactly suited to your process — shipped already mounted in cabinets or panels, completely piped and wired. Only power and process connections are needed to put them into operation. This simplified installation, plus the operating convenience and low maintenance of these custom-engineered control systems keep costs at a minimum.

Full details on Foxboro Packaged Control Systems are now available in a new series of specification sheets. They'll give you complete information on the design and construction of cabinet and panel units . . . as well as Foxboro's rigid requirements for high quality piping and wiring. Write for them today. **The Foxboro Company, 304 Neponset Avenue, Foxboro, Massachusetts, U.S.A.**



STARCH PLANT — TEXAS This 12-section Foxboro panel provides complete centralized control of temperature, flow, and liquid level for gluten and starch centrifuging equipment. Instruments are Dynalog Electronic Controllers.

FOXBORO
REG. U.S. PAT. OFF.

INSTRUMENTATION FOR THE FOOD INDUSTRIES

For more data, circle this page number on card at back →

NEW PACKAGES & PRODUCTS

"Zippered" Pouch for Cocoa

A "zipper" opener has added new convenience to the laminated polyethylene and aluminum foil pouch used for Carnation's Instant Hot Cocoa Mix.

Developed by Crown Zellerbach Corp.'s Western-Waxide Division, the feature is called C-Zip. The consumer simply tears a pre-cut corner and pulls. A tearstring cuts across the top of the pouch, making a quick, clean opening.

The Carnation pouch is constructed of 25 lb. pouch paper laminated with 7lb. polyethylene to .00035 in. aluminum foil. The foil side is coated with 15 lb. polyethylene.

Circle 30A on Reader Service Card

"New Look" for Krueger Beer Cans

"Major improvement with minimum change" was the goal of Krueger Brewing Co. when they undertook a redesign for their beer and ale cans.

The 100-year-old company has adopted a bright and simple package that places emphasis on instant identification and sales appeal.

The Krueger oval has been modified with bold lettering against a solid color background (red for beer, green for ale).

The "K-man" figure found on other labels used by the brewery has been placed on the can sides. The trademark is supplemented with a new slogan—"For Over 100 Years a Better Heritage of Fine Brewing."

Graduated Jars Add Re-Use Appeal

Designed with a re-use appeal in mind are these functional peanut butter packages introduced by Sunny Jim Co., Dallas. Sizes are standard 12- and 20-oz. and giant 2-lb. family size.

Graduated markings on the sides of the two smaller jars measure from ¼ cup to 2 cups. Bottoms have built-in stacker features for the convenience of the retailer.

The closures are lithographed in red and white with the processor's trademark.

Jars are manufactured by Owens-Illinois Glass Co. (30B), closures are by White Cap Co. (30C)

Circle key numbers on Readers Service Card

Bright Wraps for New Frozens

Six new fish steak items processed by Coldwater Seafoods Corp., New York City, are being introduced in mouthwatering pictorial overwraps made by Marathon Corp.

Each package contains four 3-oz. steaks of Iceland cod, haddock, and ocean perch, in both Icelandic and Fresher Brand labels. All steaks are boned, skinned, and breaded.

The "tyton" wrappers are striking eye-catchers. The added appetite appeal should be a 'natural' for spurring freezer cabinet impulse sales.

Circle 30D on Reader Service Card

Glamor Comes to the Lowly Spud

Two sparkling new packages have brought glamor to the hitherto homely potato:

Used by Golden Triangle Packing Co. is laminated bag of two-ply paper and glittering gold aluminum foil. The 10-lb. bag not only adds eye appeal, but the foil cuts discoloration of the potatoes.

Manufacturer is Union Bag-Camp Paper Corp. (31A)

A gravure-printed polyethylene bag made by Milprint adds taste appeal to Howard Gault's potatoes. Front of the bag features a full-color illustration of a steak-and-potatoes meal. Back of the bag offers four tempting potato recipes. (31B)

Circle key numbers on Reader Service Card

Versatile Film for Super' Wrapping

A single film which can be used for in-store packaging of fresh and processed meats, produce, poultry, and fish is offered by Olin Mathieson Chemical Corp.

Designated Olin OF-16 cellophane, it does the work of three films formerly used: It was introduced to retailers in January after five years of research.

The new cellophane is reported to sell for the same price as standard competing types of cellophane used in supermarkets.

In addition to being economical, the film is nonfogging and allows oxygen to reach the wrapped product faster than conventional films.

Circle 31C on Reader Service Card

Packers Adopt Square Containers

Square glass containers which save shelf space–for both the retailer and the consumer–have been adopted by two top processors.

Stokely Van Camp is using the bottle for its new hot catsup, Fiesta. The package style harmonizes with a series adopted for the processors pickle line.

C. H. Musselman is packaging apple butter in a squat, squared off bottle. Designed with stacker bottom, the 1 lb. 12 oz. package also features a convenient wide mouth.

Both glass containers are by Armstrong Cork Co.

Circle 31D on Reader Service Card

First Pictorial Carton for Eggs

Further evidence of the trend toward pictorial cartons is this bright package used for Bloomer's eggs.

Full color illustrations of prepared eggs decorate the top and sides of the standard set-up carton. Side panels suggest a variety of methods for serving eggs.

The carton is believed to be the first egg package incorporating the now popular pictorial concept. (FE Jan. '58, p. 74)

The egg packer is also using a jumbo 3-doz. egg container. Flat and square, this carton does not utilize the color printing, but is printed simply in blue or white. Small spot cartoons add a light touch to the package

It should look like this ! . . .

and can with Midwest's NESTAWAY SYSTEM

No other handling system protects bakery products like the Nestaway System. When you use Nestaway, your products reach the customer just as they left the wrapper - never rehandled. The result - greater product appeal and greater sales for you! Nestaway is fully covered by U.S. and Canadian patents.

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MWM

NESTAWAY

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MATERIAL HANDLING DIVISION

MID-WEST METALLIC PRODUCTS, Inc.

450 FILM Bldg. - CLEVELAND 14, OHIO

New Packages & Products

Malted Milk at Home

The lab men have been awarded full credit for the new Minute Maid frozen concentrated chocolate malted mix. Three years of research went into the development of the new product which promises to be a favorite with Junior.

Now being test-marketed in New York City, the mix is packaged in a lithographed 6 oz. can. Adding 3 parts of milk to the contents results in 1½ pts. of chocolate beverage.

NEWEST MEMBER of Carnation Co.'s family of attractive packages is this gleaming red and white ½ gal. ice cream container. The eye-catching fibre container was designed and produced by Sefton Fibre Can Co., St. Louis.

Circle 32A on Reader Service Card

Adds New Patty Paper

A "dry-waxed" laminated patty paper has just been introduced by the Mid-West Wax Paper Co., Ft. Madison, Iowa. Adaptable to all types of automatic patty-making equipment, the paper separates easily and can be stripped clean from the meat, even when it is frozen.

The paper is the fourth type of patty paper to be introduced by the company.

Circle 32B on Reader Service Card

Cookies Make Debut

The long-standing popularity of Animal Crackers has prompted Sunshine Biscuits to introduce another new cookie with a distinctive shape. Toy State cookies are each cut into the shape of one of the 48 states. A raised star indicates the state capital. Relief features are also raised.

Processor Expands Lines

New canned products offered by Libby, McNeill & Libby include black-eyed peas, turnip greens, creamed peas, corned creole, ravioli, minted frozen pineapple. Also offered are frozen meat and fruit pies.

Baby food line now includes asparagus and creamed corn.

Packaging Briefs

Half-Pint size has been added to the American Can Co. line of metal Acu-Por containers. Can features a dripless metal nozzle, reclosable cap, and a cemented side seam.

Cartons have replaced the sacks formerly used for meal and flour products processed by Fisher Flouring Mills Co.

Duff's has a reason...

A perfect, golden waffle is a work of art, and Duff's Waffle Mix is the artist's material. That's why Duff's protects and preserves their new mix with Riegel's poly-coated, wax-laminated glassine. Every time a housewife opens a package, she can be sure of well protected ingredients. It's just one more proof that *protected by Riegel* means extra benefits:

Product protection always, plus flexible packaging materials that are

... tailored to run at high speeds on automatic machines

... made to your own specifications; printed, waxed, coated and laminated combinations of all types

... packaging materials that are made right, run right, and are priced right

Hundreds of today's best-sellers benefit from Riegel's uniformly effective system of product protection. You can, too.
Write Riegel Paper Corporation, 260 Madison Avenue, New York 16.

Riegel

PROTECTIVE PACKAGING MATERIALS

Duff's Waffle Mix is protected by Riegel's special poly-coated laminated glassine, packaged at high speeds on Transwrap machines.

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GAIN ONE SKILLED TECHNICIAN

by investing
2¢ A DAY
in this
SYLPHON TEMPERATURE REGULATOR

Over the extra-long service life of this simple, but accurate control for process equipment, its initial cost averages out to *less than 2¢ per day.*

What's more, this self-contained, self-powered Sylphon® No. 999-T Temperature Regulator can free one of your skilled technicians for more important work than turning a hand valve. And by reducing maintenance and processing costs, it more than pays for itself.

Rugged Sylphon Bellows Thermostat Assembly provides the power and sensitivity for highly responsive control action. A number of types and sizes from ¼" through 4" are available with 60° ranges between 20°F and 455°F. Integral thermometer optional. Write for new Catalog D-GG.

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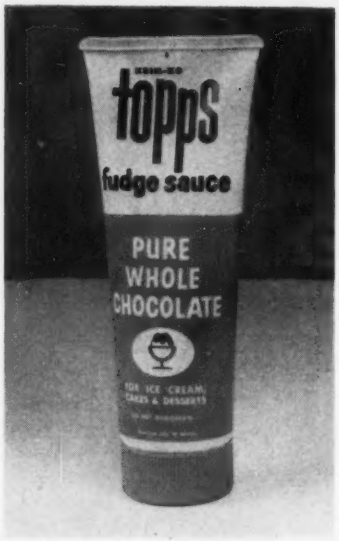
Packages & Products



Topsy Turvy Tube

Display problems for Topps Chocolate Fudge Sauce have been solved with the addition of an oversized cap to the polyethylene tube package.

Each tube now stands vertically on the cap, eliminating the need for compartmented display boxes. Label is printed in reverse to remain visible when the tube is standing.

Tubes are made by Bradley Container Corp.

Circle 34A on Reader Service Card

Up-and-Coming Bun

A new honeybun—basically a fried instead of baked cinnamon roll—is worth a sharp eye, since it's gaining wide consumer acceptance.

Buns are prepared like cinnamon rolls, except doughs are proofed on cloth racks before a 2-min. submerged fry. They're then honey glazed before packaging.

Development was reported by David E. Downs, Krispy-Kreme Doughnut Corp., at Bakery Engineers Convention.

New Product Shorts

Latin American market is the target for Bahio, a new beer marketed in the New York City area by Camden County Beverage Co.

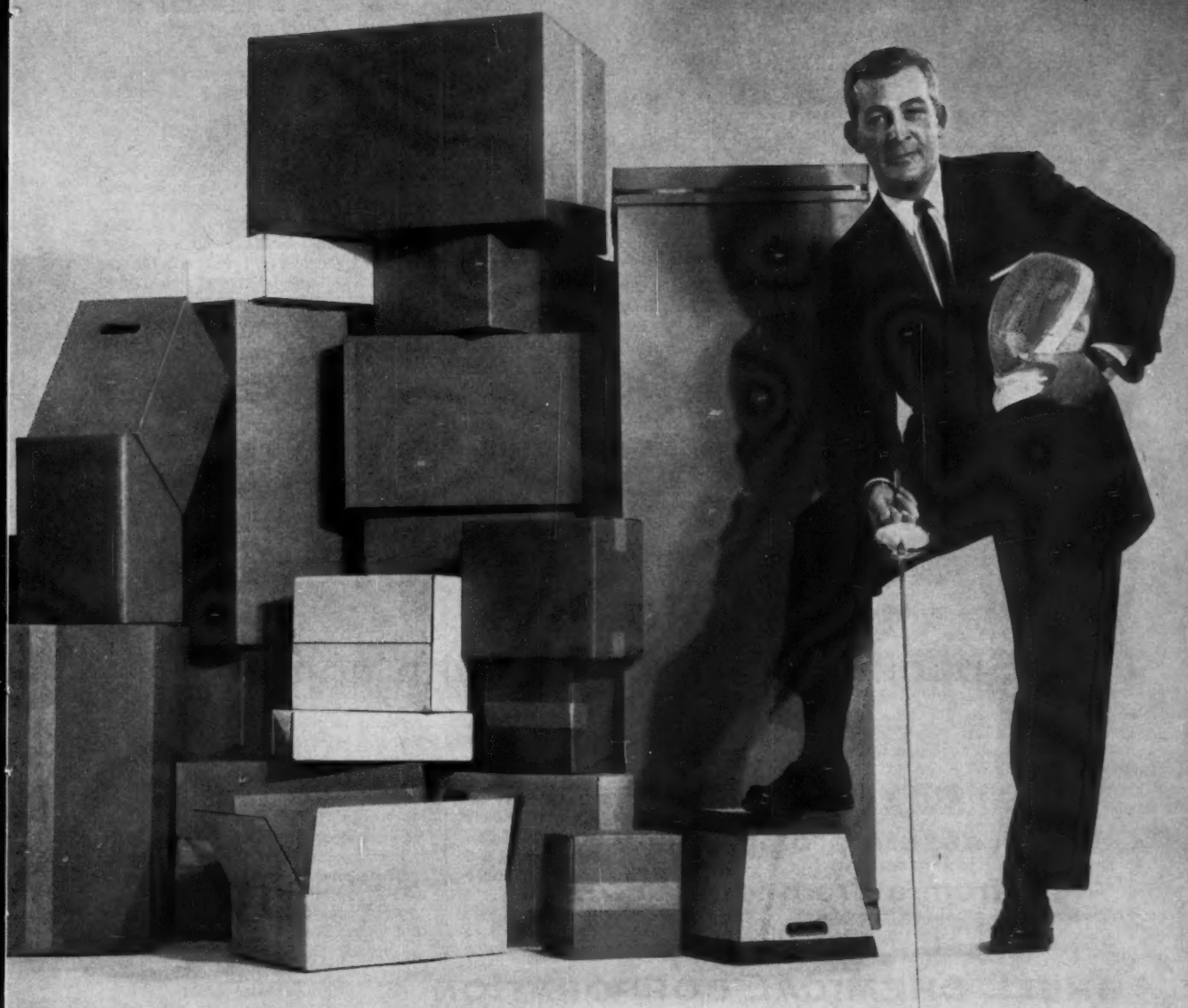
Flavor Plus Nutrition for baby is the aim of H. J. Heinz's new strained and junior vegetables and ham.

Frozen Mushrooms are now packed in 6-oz. cartons by Flavor-Lok, Inc. Swedish Meatballs are frozen and packed 36 to a box by Tempting Foods, Inc., San Rafael, Calif.

GAYLORD ACCEPTS YOUR TOUGHEST PACKAGING CHALLENGE

On guard against the profit squeeze? Too much product protection? Too little? Too many interruptions on automated packaging lines? Gaylord men can help you check these points — and more. They have developed a special skill in scoring packaging successes with corrugated . . . against the toughest challenges.

Whether you need regular cartons by the thousands or engineered packaging, call your nearby Gaylord man.



GAYLORD CONTAINER CORPORATION

Gaylord Boxes

HEADQUARTERS, ST. LOUIS
PLANTS COAST TO COAST

DIVISION OF **Crown Zellerbach Corporation**

Specify **glycerine** with confidence

Conveniently located storage facilities
assure prompt delivery,
from a drum to a tank car.

SHELL CHEMICAL CORPORATION
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OLIN PACKAGING PRODUCTION NEWS

OLIN CELLOPHANE PUTS PRODUCTS IN MOTION — SPEEDS PRODUCTION, SPEEDS PHYSICAL DISTRIBUTION, SPEEDS SALES

MACHINES FOR PACKAGING IRREGULAR SHAPED PRODUCTS

How irregular in shape can a product be and still enjoy the benefits of modern efficient packaging? Apparently there's no limit—save size—with today's packaging machines and materials. Round, disc-shape, oval or square . . . pentagonal, hexagonal or just plain ornery-shape . . . hard as a bolt or soft as a cupcake . . . sticky or slippery—you name it and there's a packaging machine in existence, or one which can be custom-built to package it automatically in today's improved transparent materials. And package it to advantage from every standpoint—eye appeal, product protection, utility, efficiency and economy.

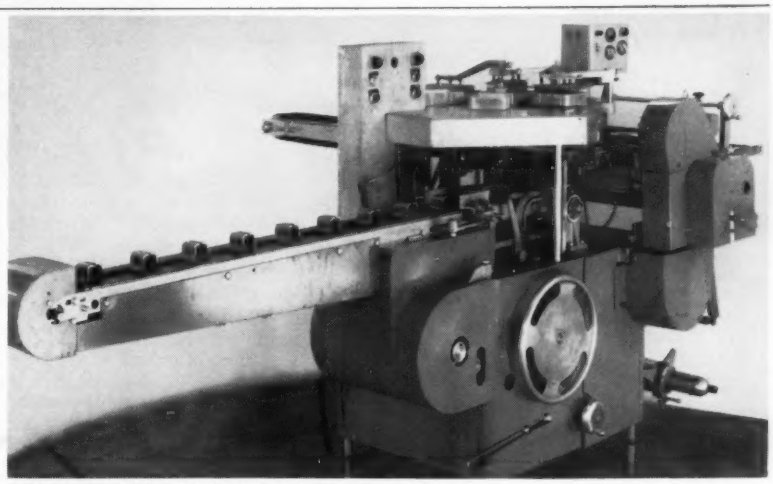
AN EXAMPLE

An industrial caterer* in a large Eastern City who feeds 7000 people daily in offices and factories reports packaging labor costs cut by one third and increased sales—simply through wrapping triangular sandwiches and pastries in cellophane by machine instead of by hand. Scores of food products are being packaged this way all over the country. *(*Name on request)*

TALENTED MACHINES

Let's have a look at some of the machines which make possible this progress in packaging automation of products with odd and irregular shapes.

Space restricts us to looking at the machines of four companies which specialize in the wrapping of small, irregular, hard or soft products. The companies are: Wrap-King Corporation, of Holyoke, Massachusetts; Maine Machine Works, of Los Angeles, California; Modern Machinists Co., of Washington, D. C.; and the Oliver Machinery Company, of Grand Rapids, Michigan.



WRAP-KING MODEL F-2037—For Wrapping Frankfurts

WRAP-KING

Wrap-King equipment is designed to handle simple as well as difficult packaging operations. Its DW line of machines covers a multitude of packaging operations of the character under consideration. In addition, WRAP-KING has machines for bundling and for carton and meat wrapping. Their newest machine, just out, is Model F (see photo) for frankfurt wrapping. Hot dog sales should take a jump.

HARTMAN TRIANGULAR SANDWICH WRAPPER

The popularity of the triangular cut sandwich, involving many millions of units daily, justifies the use of machines designed specifically for this purpose. The HARTMAN is one.

This machine, manufactured by Maine Machine Works, is fully automatic. It wraps in cellophane, seals, labels and dates—and requires only one operator. Reported savings of 30% on material are effected and its turnout equals the work of five operators wrapping by hand.

MODERN SANDWICH WRAPPER

The MODERN (manufactured by Modern Machinists Co., 774 Girard St. NW Washington, D. C.) handles cellophane and most other heat-sealable films. The machine (see photo) needs little maintenance, as all parts are sealed ball bearings or self-lubricated feed. Any parts that touch the sandwich are made of stainless steel or chromium plated steel to pre-

(Continued on Page 2)

NEW PACKAGE LABELING TECHNIQUE

A noteworthy innovation in package labeling—introduced recently—is a new technique which combines the attractiveness and durability of printing with the versatility and economy of the labeling process.

Basically, the new process consists of a thin, preprinted coating which is heat-transferred directly onto packaging films (such as cellophane) in such a way as to become an integral part of the package. It is mar-resistant and cannot be pulled off. The quality appearance resulting from this process has gained widespread attention.

THE PROCESS

Key to the process is a new line of labels manufactured by the Dennison Manufacturing Company of Framingham, Mass., and sold under the patented name of Therimage. A very simplified explanation of it is a comparison to the decal principle, but heat rather than moisture is used to "transfer" the printing. This new paper is used in conjunction with a special mechanism for automatically accomplishing the heat transfer of the label to the film. The machine, termed an Imagraph, is manufactured by the Adolph Gottscho Company, Inc., of Hillside, New Jersey, and is in the form of a compact attachment which may be mounted on existing bag-making, bundling and wrapping machines.

Designed for automatic, high-speed application to packaging materials, the Therimage label consists of a preprinted, heat-sensitive coating supported by a paper carrier. The paper serves only as a temporary mechanical support for the coating until it is bonded to the packaging material.

(Continued on Page 3)

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OLIN PACKAGING PRODUCTION NEWS

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Editor-in-Chief .....Joseph C. Mertes
Film Editor ..... Andrew W. Crawford, Jr.

SHOP TALK

bag, double-wall or bag, duplex
—Any bag constructed of two plies of packaging material. Such bags generally have more than twice the strength of an equivalent single-wall bag and provide far better product protection. Very frequently the two plies are spot-glued together at the opening.

bag, gusseted
—Any bag having a bellows type fold or tuck at each side. To determine sizes of gusseted bags for specification, open bag out and measure in three dimensions: length, face width and gusset length.

bag, crimp bottom
—A flat or gusseted bag formed by simply crimp-sealing one end of a formed 'tube' with a serrated sealing bar. This is the simplest form of bag and is rarely made with gussets. Usually the crimp bottom is sealed by means of heat in the case of cellophane.

bag, foldover bottom
—A flat or gusseted bag, the bottom of which has been folded back on itself and sealed by means of heat or an adhesive to the main body of the bag. This is a stronger type of construction than the crimp bottom bag.

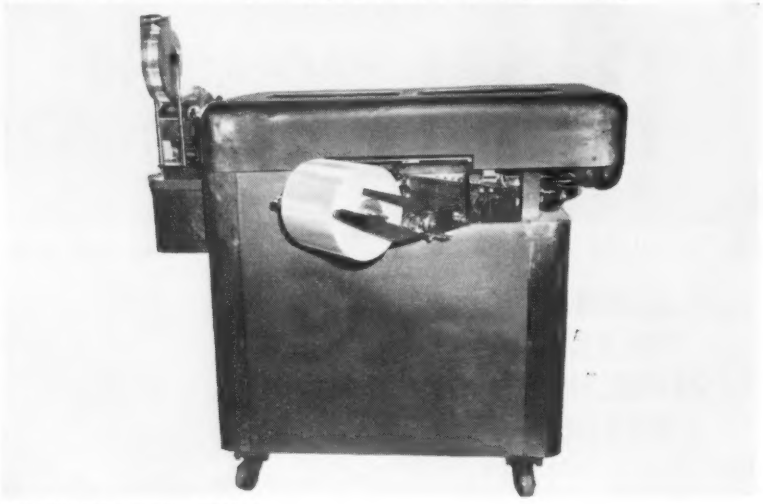
THE BOOKSHELF

Container Laboratories Booklet

This booklet, prepared by the testing division of Container Labs, packaging engineers, illustrates and describes their package consulting services and contains some of their interesting new package designs for protection shipments.

The booklet develops the concept that Package Engineering is a comprehensive term embracing the entire range of skills related to increased profits in packaging and handling. In addition to the designing and testing of a container, these include: overall analysis of packaging and handling operations; research and evaluation of materials, manpower and methods; selection of proper containers, equipment and techniques for specific jobs; and many other special studies leading to more efficient packaging and handling. Available, free, from Container Laboratories Inc., 45 E. 22nd Street, New York, N. Y.

MACHINES FOR PACKAGING IRREGULAR SHAPED PRODUCTS (Continued)



The MODERN Sandwich Wrapper

vent contamination. Refrigerated ingredients are still chilled after being discharged from the machine as the heat-sealing time is only 1½ seconds.

Space occupied by the machine is 2′ x 4′ x 44″ high (projecting carrier necessitates 4′ x 4′ total area). The machine is on caster wheels and can be readily stored when not in use.

Width of Packaging Material

Packaging materials 8½″ wide and 8″ long will handle both standard and thick sandwiches as an adjustment can be made to any length from 8″ to 9″ by a small lever.

The MODERN wraps and seals 50 sandwiches per minute, compared to manual wrapping and clipping of two per minute. Changing or loading is simple: remove empty tube and carrier tube, and insert new roll; place on carrier arm; remove seal tape and insert packaging material between feed rollers until it touches the blade and starts feeding. Telescoping is prevented by upper arms which are adjustable as to width.

THE OLIVER MODEL 799

The Oliver Machinery Company's Models 799 (H,J,K,L,M,N,P,T) overwrap cakes, cookies, textiles, candy on U-boards or cards. They handle heat-sealing cellophane rolls and the fold is a progressive end lock; this can be instantly changed to an underfold or envelope fold. Sheet and package size ranges are large. Speed range is from 20 to 50 per minute. Machines are fully adjustable within stated limits by using different tuckers.

Features

Regular features include automatic stop in case of film break, automatic card folder and feeder, 6′ conveyor. Optional features: fold changeover, labeler for applying label to any position; coder, day-of-week coder or label-imprinter for variable copy; electric-eye registration; rust-proof units.

Specification for Wrap-King DW Series

USE: For round disc, square, rectangular, irregular shapes. Candies: 2¢ and 5¢ Mint Patties, Easter Eggs, Valentine Hearts, Caramels, Nuggets, etc. Bakery items: Danish pastry, pies, etc. Miscellaneous: Ball bearings, friction tape, moth blocks, typewriter ribbons.

MATERIAL: Cellophane, polyethylene (if specified) and many other films.

TYPE OF FOLD: Round disc or irregular shape: controlled bunch fold—folds are brought together and sealed on bottom panels. Square & rectangular—controlled die fold.

PACKAGE SIZE	MODEL		
RANGE:	DW-0	DW	DW-2
Diameter:	½″ to 1¼″	15/16″ to 3⅛″	1¾″ to 5⅛″
Height:	¼″ to ½″	¼″ to 1⅞″	¼″ to 1½″

	DW-3	DW-4
Diameter	2½″ to 6″	2½″ to 6½″
Height:	¼″ to 2½″	¼″ to 2½″

REGULAR FEATURES: Motor, thermostatic heat controls, variable speed drive, continuous chain infeed, bottom belt discharge.

OPTIONAL EQUIP. AVAILABLE: Change parts for varying shapes and sizes; automatic labeling unit; photocell registration for printed film, card feed.

ADJUSTABILITY: Through the use of change parts, machine can be changed over from one size to another, regardless of shape, by machine operator in seven to ten minutes.

SPEED: 60-140 packages per minute.

Specifications for Hartman Triangular Sandwich Wrapper

USE: For wrapping diagonally cut sandwiches.

MATERIAL: Cellophane.

TYPE CELLOPHANE: Heat-sealing roll stock.

TYPE OF FOLD: Cellophane drawn into unit at about 45° angle, formed around triangular product and heat-sealed on underside.

SHEET SIZE: Roll width: Shortest leg of product and 1.8 x thickness & ½″ lap. Cutoff: Shortest leg of product & 1.8 x thickness & ½″ lap.

PACKAGE SIZE RANGE: Built to requirements.

ADJUSTABILITY: Non-adjustable.

SPEED: 30 per minute.

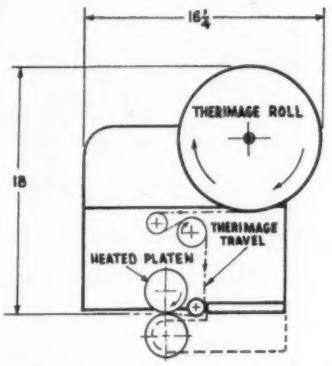
OTHER FEATURES: Labels, codes and dates. One operator.

(For complete information on the machines discussed write the respective manufacturers or the Machine Services Editor, Packaging Production News, Film Division, Olin Mathieson Chemical Corp., 655 Madison Ave., New York 21, New York.)

OLIN CELLOPHANE PUTS PRODUCTS IN MOTION

NEW PACKAGE LABELING TECHNIQUE (Continued)

In use, a roll of preprinted Therimage label paper is placed on the Imagraph Machine and fed through a group of rollers. One of these is a thermostatically-controlled heated roller (platen) shaped to the outline of the label to be impressed. The label paper and the packaging material are fed together between the heated platen roll and an impression roller. As the heated roller makes contact with each label, the printed coating is cleanly separated from the paper base and transferred to the packaging material. The paper carrier is then discarded.



Outline Drawing of Imagraph Machine

ADAPTABILITY

Three types of "blank" Therimage stock are currently available to printers, the choice being governed by the printing process to be employed, the label design and the manner in which the label is to be applied (the process allows for application to either the outside or inside of packaging material).

TYPES OF THERIMAGE STOCK AVAILABLE

TYPE I – Made with pigmented, heat-sensitive coating which may be printed by letterpress, offset, lithography, rotogravure and flexography. Used in underside labeling of transparent wrappings films, the opaque background eliminates the need for an extra printing operation.

TYPE II—Made with a transparent coating and adapted for use with letterpress inks. The transparency permits this label's use for both inside and outside labeling.

TYPE III—Made with a transparent coating adaptable to gravure or flexographic printing. May be used for inside or outside application.

These types of Therimage stock are available for commercial use in the form of blank rolls and are manufactured with non-toxic coatings. The stock has a smooth, non-tacky, ink-receptive coating, exhibits little curl and may be handled with the same precaution afforded ordinary heat seal papers. Dying and slitting properties of the carrier paper are satisfactory.

In printing, it should be noted that the ink is always applied to the coated side of the label. Therefore—inasmuch as a reversal of the label takes place during transfer—it is necessary to print labels for use in *outside* applications with reversed (natural) plates. Inks must also be applied in reverse order, with background colors printed last. Underside labels may be printed with ordinary plates and a normal sequence of inking. Special Therimage inks are available for both types of applications, and may be used in the same manner as ordinary inks. They may be used on normal conventional printing equipment.

Therimage labels are provided in rolls having a maximum diameter of 10 inches and are wound on 3 inch inside diameter cores with the printed side out. Registration holes ¼ inch in diameter are punched in the carrier paper to position the label, the nuisance and expense of slots being eliminated since the Therimage carrier paper does not control the label shape.

AUTOMATIC APPLICATION

The Therimage process is particularly adapted to high speed mechanical application during the packaging operation, itself. The Imagraph machine used for the application is specifically designed for rapid interchange of Therimage label-rolls where required, and to register and transfer the labels without print distortion in synchronization with the packaging machine. This eliminates both butt-roll and over-run waste.

In addition the Imagraph incorporates a thermostatically-controlled heated plate which may be varied from 300 to 500 degrees Fahrenheit so as to provide the optimum temperature for the label application depending upon machine speed.

APPLICATIONS

Currently recommended applications for the Therimage labeling include its use to identify such packaged goods as bakery products, meats, candy, frozen food, dry goods, textiles, toys and hardware items.

Moreover, in conjunction with preprinted wrappers, they may be used to identify contents to highlight premium offers, recipes and special promotions, as well as for indicating prices and styles.

Equipment is also under design at this time to expand the use of the labeling process in numerous additional packaging applications.

HARD FACTS ON SOFT GOODS PACKAGING

Self-selection packaging is increasing in the soft goods industry. Self-selection really is a compromise between the complete self-service supermarket and the traditional clerk-service of the department store. Shopping speed and convenience are its parents. Here is how they met.

Traditional personal-service outlets have been doing 50 to 70% of their total volume during only 12 shopping hours of the week. During this peak period customers often outnumber the sales clerks 10 to 1, with obvious problems of servicing. Equally obvious solution: permit the shopper to make her own selection. A bonus to this is that many buyers resent any sales pressure whatsoever.

Research has proved that the average shopper takes only 10 seconds or so to make a buying decision of the character under discussion. If she can't see it she assumes it is not available.

PACKAGING TO THE RESCUE

All of which leaves it up to packaging to do a job. Packaging must inspire impulse buying and facilitate its consummation.

Many manufacturers and retailers who feel that their products do not lend themselves to modern packaging are missing the boat. For who can say that even shoes will not be visually packaged and self-serviceable in the not-distant future? Perhaps a better way to put it would be to list the items which *cannot* be packaged successfully for retail selling! They certainly are few in the soft goods field, except in the areas when style is a major factor.

Take the case of a company manufacturing a well known brassiere. Management was sold on packaging it in transparent film in spite of apparent substantial survey-indicated disapproval by both retailers and consumers. The result? A 50% increase in sales in the first year! A manufacturer of underwear reaped a 68% sales increase in one year.

And so it goes—panties, hosiery, draperies, blouses, bedspreads—the list is long with increasing numbers of soft goods being sold in self-selection packaging.

MULTIPLE UNIT PACKAGING

Experience has proved that the shopper can be led into buying more than one of a low- or medium-priced staple soft goods item, if the packaging is right. This also fits in very neatly with the average American's propensity for lavishly giving gifts, and it all means greatly increased sales for the merchandiser who realizes that the package is no longer just a shipping container but an effective selling tool.

For the newcomer to this modern way of retailing here are three helpful hints:

1. Get an effective package design
2. Have an effective display fixture
3. Have product samples for consumer examination. The packaging machines and materials to do a job are available—so, get on the soft goods packaging bandwagon!

SEE IT HERE

FONDA CONTAINER PACKAGES IRREGULAR SHAPES AUTOMATICALLY

Fonda Container Co., Inc., of St. Albans, Vermont, manufactures paper plates and bowls of many different shapes and sizes. By employing Wrap-King automatic packaging machinery to wrap their products in cellophane, they have overcome the problem of odd shapes and sizes, have kept labor cost to a minimum, and gained the visibility and sparkle of cellophane for a "selling package."

Many manufacturers are faced with the problem of irregular shaped products, yet want to gain the advantage of transparent packaging. How does Fonda Container do it?

1. As paper bowls leave the stamping machine they are counted, and a cardboard U-board with sales message is attached.
2. Plates are automatically fed into and removed from wrapping machine by conveyor belts.
3. As bowls move into machine, an elevator lifts bowls up against cellophane. Cellophane is thus draped across and then shaped around bowls. Tuckers bring cellophane underneath bowls and they pass on to heater plates.
4. Multiple machines in wrapping room are set up to handle whatever shape and size bowl or plate is being manufactured at the time.
5. Variety of products are overwrapped in cellophane. All seals are hidden from shopper for greater visibility and to give neater, more attractive package.

Fonda Container Co., Inc. experience with their irregular shaped packages heads up the versatility of cellophane as a wrapping material. Fonda has obtained a selling package at minimum cost for its multiple line of products.

Statements made herein as to the performance or characteristics of any machine or other product not of our manufacture, are made on the best information we could obtain and should be checked with the appropriate manufacturer or distributor of the product involved. The Film Division of Olin Mathieson Chemical Corporation and the Packaging Production News are neither recommending or guaranteeing any machine or product reported, nor do they warrant or assume any obligation with respect to the performance or characteristics thereof.

Conveyors feed and remove plates from wrapper.

Many machines wrap wide variety of shapes.

Seals are hidden for neat package.

OLIN CELLOPHANE

OLIN CELLOPHANE PUTS PRODUCTS IN MOTION
SPEEDS PRODUCTION
SPEEDS PHYSICAL DISTRIBUTION
SPEEDS SALES

FILM DIVISION • OLIN MATHIESON CHEMICAL CORPORATION • 655 MADISON AVENUE • NEW YORK 21, NEW YORK

COMMENTS & QUESTIONS

Readers Have More to Say About "Food Engineering"

Dear Editor:

Your new format is excellent. The "signal" pages are a good idea, and my personal reaction is that they do what they are intended to do. They are understandably brief, but to the point. More magazines should use this technique.—*Charles P. McCormick, Chairman of Board, McCormick Co., Inc., Baltimore, Md.*

Dear Editor:

The article, "Put Your Problems to Route," is certainly of great interest. The "steps" as outlined in this article constitute a practical and efficient formula for solving both management and production problems.

This is only one fine example of the many excellent articles that appear in FOOD ENGINEERING.— *O. A. Rose, Vice-President, Tranin Egg Products Co., Kansas City, Mo.*

Dear Editor:

You are publishing an interesting magazine which is well up-to-date.— *C. L. Rumberger, Vice-President Research & Quality Control Division, H. J. Heinz Co., Pittsburgh.*

Dear Editor:

I would like to compliment you on the new format and editorial formula. The fast reading "signal" pages certainly make it easier for the average executive who is swamped with reading material. — *Joseph Griesedick, President, Falstaff Brewing Corp., St. Louis.*

No Noninginase

Dear Editor:

On page 17 of FOOD ENGINEERING for Jan. 1958 this statement was printed:

"Bitter principle in single-strength canned navel orange juice is obviated by Noninginase, a new enzyme developed by Rohm & Haas."

Knowing how careful you are to give your readers authentic information, we are sure you had every confidence in the source of this particular item. It would appear, however, that in this instance your confidence was misplaced. Rohm & Haas does not make an enzyme named "Noninginase", or any other enzyme for the purpose mentioned.

We have received several inquiries as a result of the item; and while we do not mind answering them, it is our thought you may wish to set the record straight by printing this letter. —*Colin C. Campbell, Rohm & Haas Co., Philadelphia.*

In Reply:

Indeed we do wish to put the record straight. And we're sorry about all those inquiries, although they prove that there is a market for such a product.

As you know, many companies have tried to devise a way to lick the bitter principle. So we were not surprised when informed that your progressive company had turned the trick.—*The Editor*

British Process Clicks

Dear Editor:

I have received a number of letters and personal visits with regard to the cheese mechanization discussed in my article in the December issue of FOOD ENGINEERING. I hope this type of manufacturing may be given serious consideration in this country. —*F. V. Kosikowski, Professor of Dairy Industry, Cornell University, Ithaca, N. Y.*

Inaccurate Can Fills

Question—We're troubled by occasional low fills of pea beans, which are supplied to a volumetric filler by a vertical chute from the floor above. Probably, low fills are caused by inadequate supply of beans. However, it is very difficult for either the filler operator, or the worker feeding the beans, to determine when this occurs.

We tried using a small pressure switch in the supply chute to show low bean level, but found it could be jammed by the beans. Can you suggest a solution?

Answer—A low-level alarm seems to be a sensible approach, but the product must be taken into account in selecting the unit. We suggest use of an electric eye.

To install it, cut two holes (dia-

Outstanding Accuracy

PALMER

Dial Thermometer

Check these functional features

- Direct-drive Bourdon Coil with a filled system for longer lasting accuracy.
- Stem can be placed at any desired angle and case can be rotated to most readable position.
- External calibration for zero setting.
- Unaffected by stem alignment.
- Accurate to one scale division.
- No sticking at any temperature.
- Non-corrosive case.

PALMER

THERMOMETERS, INC.

Mfrs. of Industrial Laboratory, Recording and Dial Thermometers

2515 Norwood Ave., Cincinnati 12, O.

For more data, circle this page number on card at back →

Are you being robbed by high cleaning costs?

Time is the Thief!

Cost-accounting shows that time is usually the big-ticket item in maintenance cleaning costs–time spent in cleaning and time lost in production.

The faster you clean, the less it costs. That's why Oakite speed-cleaning gives you low-cost end results–always.

Here are a few examples of how Oakite specialized cleaning materials and mechanized equipment are cutting maintenance costs:

Baker—*Soak time for tinned pans cut from average 48 hours to 4 hours, hand brushing all but eliminated, 'freak' baked goods no longer a problem.*

Bottler—*Conveyor chain maintenance entirely eliminated through use of Oakite lubricant. $2,000 saved yearly on time and reduced bottle breakage.*

Dairy—*Descaling of ammonia condensers reduced from 8 hours to 2 hours. Oakite circulation cleaning eliminates dismantling and drilling.*

Fish Packer—*Stripping of fish-holding tanks took a full day of power buffing. Oakite Hot-Spray Unit does a better job in just over one hour.*

Meat Packer—*Bacon room equipment formerly took 9 hours to clean. Oakite SANISEPTOR Unit does it in 2¼ hours—with walls and floors included!*

Maybe Oakite speed-cleaning can help you, too, in saving maintenance cleaning money. Call your local Oakite man for free help, or write for free informative literature to Oakite Products, Inc., 26G Rector Street, New York 6, N. Y.

OAKITE *In our 50th year*

MATERIALS · METHODS · SERVICE

SCIENCE

Export Division Cable Address: Oakite

Technical Service Representatives in Principal Cities of U. S. and Canada

Comments & Questions

metrically opposed) through the chute, and insert windows of shatterproof glass or clear plastic. With a light source on one side and the electric eye on the other, a circuit can be established when level of beans in chute drops below windows.

Locate the window level carefully, so that proper can fills are maintained as long as supply of beans remains above this level.

Unit will alert both the filler operator and 2nd-floor worker to a low-level condition. If it can be corrected quickly, this should suffice. Otherwise, an adjustable time-delay relay can be used to stop inflow of cans automatically, so that no underfilled cans get through.

Vinegar Discolors

Question—Within a week or so, the vinegar in which we glass-pack pickled (hard-boiled, shell-less) eggs, begins to turn yellow. Do you know why this happens, and how it can be checked?

Answer—We don't believe this discoloration is caused by egg-yolk pigment, which is carotene-like and not water-soluble. More likely, your problem is enzymatic or non-enzymatic browning. It's difficult to tell, without seeing samples. Most important, however, make certain that you're using distilled vinegar.

If the problem is enzymatic, use tannin-free distilled vinegar free of heavy-metal contamination, such as iron and copper in pipelines.

But if discoloration is due to non-enzymatic browning (Maillard reaction), you're really up against it. You might inhibit browning by adding SO_2 to the vinegar. Or the eggs could be de-sugared by a commercial deoxygenase enzyme. This way, there would be no sugar to react with egg proteins.—*Roy E. Morse, Dept. of Food Technology, Rutgers University, New Brunswick, N. J.*

Q.—Can you detect the quality of eggs when you break them?

A.—Best quality eggs stand high and have the thickest whites.

Q.—What technique can I use to measure the color of fats?

A.—Usual method is the Lovibond system of expressing color in yellow and red units. Preferrable method is by comparing filtered fat with color standards of the Fat Analysis Committee (AOCS).

GET HIGHER YIELD...LOWER COSTS...WITH

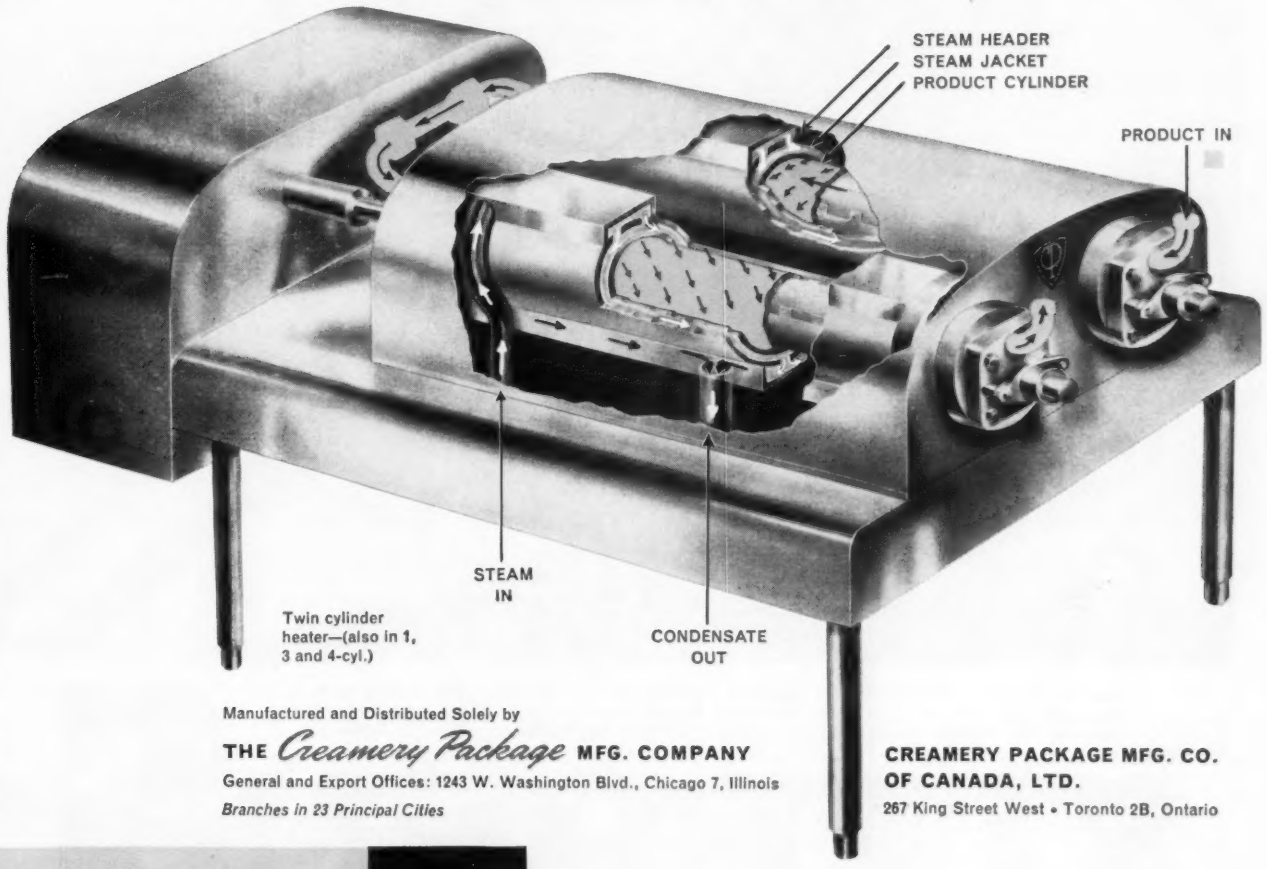
Creamery Package

Swept Surface
HEAT EXCHANGER

for CONTINUOUS Heating and Cooling

or ULTRA-HTST pasteurizing of LIQUIDS and SEMI-SOLIDS

No film build-up...ends bake-on losses and heat exchange drop off ...New, more efficient processing for salad dressing or mayonnaise, starch pastes (heating or cooling) soups, peanut butter (chilling), strained foods, tomato juice...Practically anything that can be pumped, can be pumped thru the ***CP SWEPT SURFACE***



Manufactured and Distributed Solely by

THE *Creamery Package* MFG. COMPANY

General and Export Offices: 1243 W. Washington Blvd., Chicago 7, Illinois

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CREAMERY PACKAGE MFG. CO. OF CANADA, LTD.

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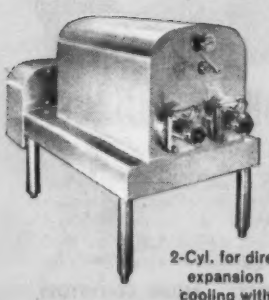


2-Cyl. for direct expansion cooling with ammonia or Freon

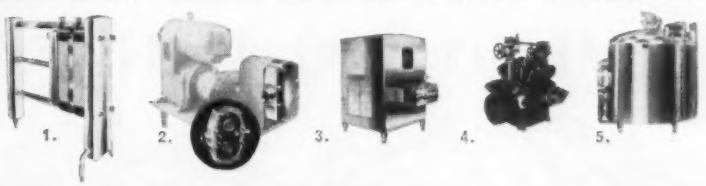
Chills all shortenings, INCLUDING LARD ...chills and slush freezes juices, etc.

Engineered...

"Costs You Less per Pound of Production"

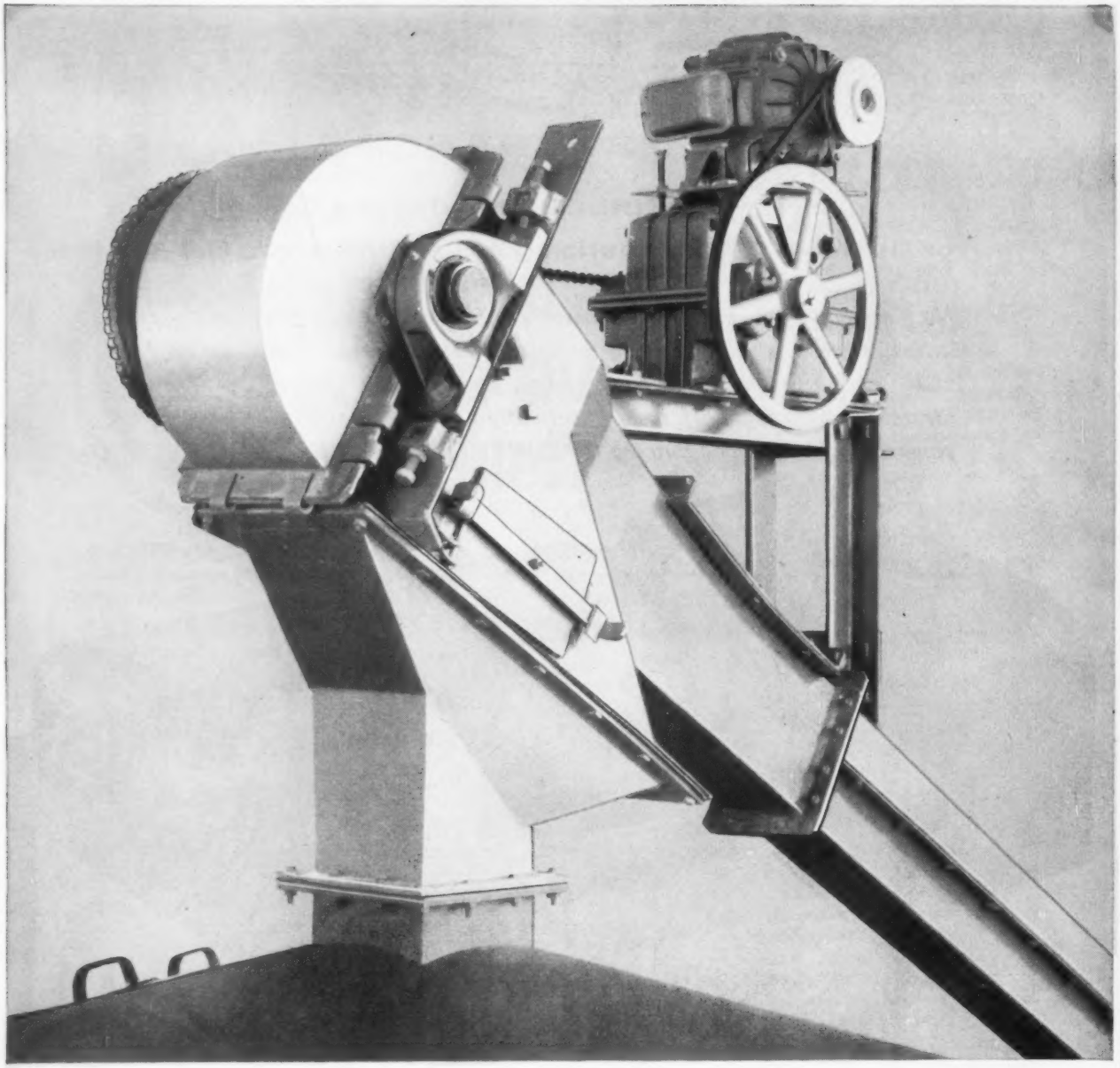
Ask for Technical Data

THE MARK OF DISTINCTION IN FOOD PROCESSING EQUIPMENT



1. CP Crescent Plate Heat Exchangers 2. CP Pumps for every need (Rotary Type shown) **3. CP Homogenizers and High Pressure Pumps 4. CP Refrigeration**—cooling-storage-freezing **5. CP Vacuum Pressure Processing Tanks**

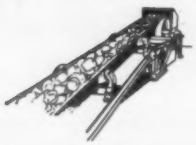
Ask About CP Materials Handling Conveyors



One of the most efficient bulk food handling machines ever built is the REDLER conveyor-elevator. An exclusive S-A product, well over 20,000 are in use today. This is part of a REDLER system which carries and protects malt for a Central American Brewing Company.

STEPHENS-

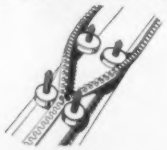
THE BIG NAME IN BULK MATERIALS HANDLING



BELT CONVEYORS

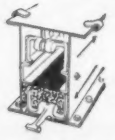
CARRIERS

VIBRATING SCREENS



ZIPPER CONVEYOR-ELEVATORS

BIN GATES — ALL KINDS



REDLER CONVEYORS, ELEVATORS

← For more data, circle this page number on card at back

Put the squeeze on high bulk food handling costs with S-A ENGINEERED CONVEYING SYSTEMS

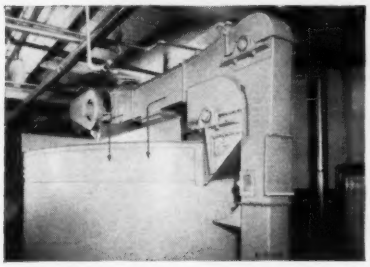
More consumer dollars are being spent on food now than ever before. The emphasis is on quality and convenient packaging which so often call for involved handling by food processors. Today the heat is on high food handling costs. Management is in quest of methods which will up production and at the same time preserve product quality standards.

The answer, of course, is in automation, and where can it be better applied than in your conveying methods? Squeezing down handling costs is the kind of pressure STEPHENS-ADAMSON engineers have been applying in the food processing field for years. Their sound, progressive designing has resulted in thousands of conveying systems to move a multitude of food products.

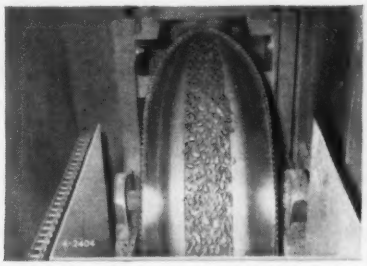
Closely allied to the S-A field engineering effort is a never-ending company research and product development program. It's part of over-all planning to provide the finest conveying machinery that can be devised. This equipment is "custom fitted" into engineered systems that pay fast returns on their installation costs.

Explore the possibilities of conveyor automation on your production line. We'll be glad to send literature or talk about it with you.

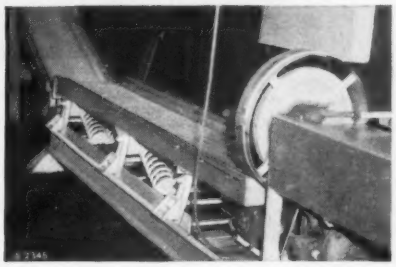
Almost any pulverized, granular, or small lump bulk material can be unloaded by a STEPHENS-ADAMSON box car unloader. A pantograph arm reaching into the furthest corners, can empty an average box car in about 30 minutes. One man can handle the entire operation.



West coast brewery uses a Z-Type REDLER unit to carry ground malt from mill, up and over steel storage tank. Conveyor flights in the totally-enclosed steel casings move product forward en masse, completely protected from loading point to discharge.



S-A Zipper belt handles cocoa beans for a New Jersey food processor. This type of conveyor opens to receive materials, zips closed, and then moves contents along with the belt gently and dust-tight to discharge point where it unzips and unloads.



A natural frequency conveyor is used in a Chicago pickle packing plant to screen off the undersize or imperfect pickle slices. The product moves at rate of 30 to 40 F.P.M. The unit may also be adapted to processing other food products. This process releases employees for other jobs.

S-A ADAMSON

EQUIPMENT

S-A district or main plant offices can supply complete information on any conveyor product, or any phase of bulk material handling. Bulletins on all products are available on request.

MFG. CO.

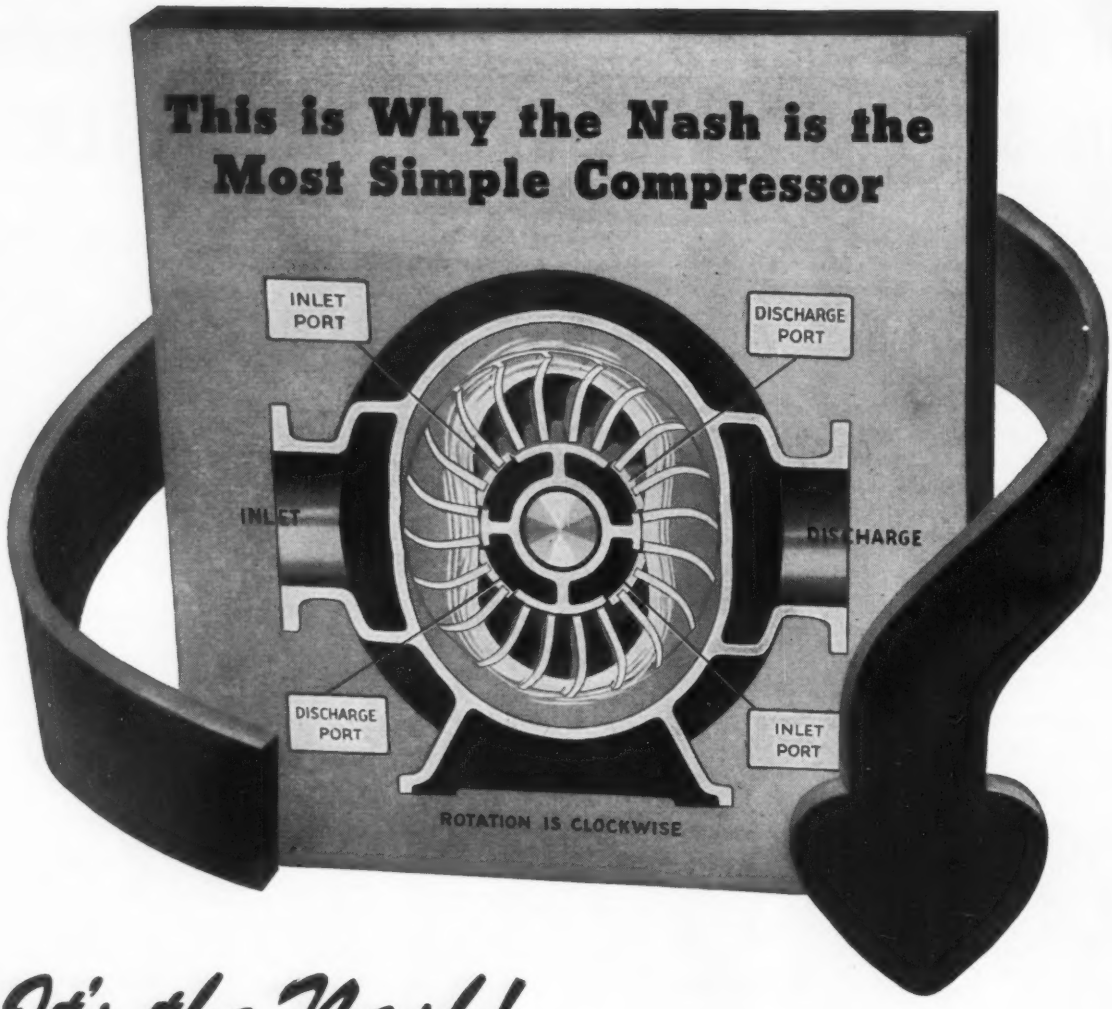
MAIN OFFICE AND PLANT
6 RIDGEWAY AVENUE
AURORA • ILLINOIS

PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA
CLARKSDALE, MISSISSIPPI • BELLEVILLE, ONTARIO

SEE US IN BOOTH 348-349, Material Handling Show, Los Angeles, May 8-10.

For more data, circle this page number on card at back →

This is Why the Nash is the Most Simple Compressor



It's the Nash!

There are no mechanical complications in a Nash Compressor. A single moving element, a round rotor, with shrouded blades, forming a series of buckets, revolves freely in an elliptical casing containing any low viscosity liquid. This liquid, carried with the rotor, follows the elliptical contour of the casing.

The moving liquid therefore recedes from the rotor buckets at the wide part of the ellipse, permitting the buckets to fill with gas from the stationary Inlet Ports. As the casing narrows, the liquid is forced back into the rotor buckets, compressing the gas, and delivering it through the fixed Outlet Ports.

Nash Compressors produce 75 lbs pressure in a single stage, with capacities to 6 million cu. ft. per day in a single structure. Since compression is secured by an entirely different principle, gas pumping problems difficult with ordinary pumps are often handled easily in a Nash.

Nash simplicity means low maintenance cost, with original pump performance constant over long periods Data on these pumps sent immediately on request

No internal wearing parts.

No valves, pistons, or vanes.

No internal lubrication.

Low maintenance cost.

Saves floor space.

Desired delivery temperature automatically maintained.

Slugs of liquid entering pump will do no harm.

75 pounds in a single stage.

NASH ENGINEERING COMPANY
313 WILSON, SO. NORWALK, CONN.

Kill Illegal Practices for Profit's Sake

Violation of the sound business practices covered by the Robinson-Patman Act is an old story in the food industry. Everyone knows about it. All the leaders are against it.

But damaging violations continue. Worse, disregard for Robinson-Patman is reported to have increased since the FTC retailer-packer fiasco.

GMA started the ball rolling toward improved practices in late '56. Then, manufacturers, retailers, and wholesalers were of one mind. "Let's clean house," they said.

FTC ruling made joke of enforcement

But serious effort suffered a setback last year. It followed FTC's ruling that certain retailers with minor meat packing operations did not come under FTC jurisdiction. That made a joke out of enforcement.

Yet Commissioner Sigurd Anderson harangued the industry in January because of its illegal marketing practices. He also claimed increased activity for FTC, complained about lack of cooperation by industry, urged individuals to report violations, and dangled the specter of tougher legislation.

In March, Paul Willis, President of GMA, stated that "many in the trade feel that FTC is not doing an adequate job of enforcing the law." At the same time, he urged every firm to review its own operations in light of the law.

Mr. Willis suggested another procedure, too: "Whenever anyone knows about a transaction which apparently is in violation, he should send full information to the FTC."

That is the way most likely to get results—at least if FTC keeps its word. It promises to follow up reported violations—and without revealing the source of information.

So corrective methods are available. And the industry better utilize them. Bad practices have repercussions in many unfortunate forms.

Bad practices wreck profits for all

Improvement of profit margins is the number-one concern of food manufacturers. But how can profits be protected in a field ridden with "give-away" competitive practices?

Take the frozen food business. It makes more than its quota of give-aways to curry favor with retailers—or at the demand of retailers. And scarce was the profitable operation in '57.

Another thing: Make business too rough for the smaller manufacturers and they merge or become part of a grower-processor cooperative. And cooperatives have a tax advantage.

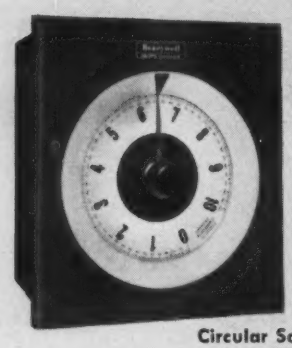
What's more, when enough people injured by illegal competitive practices make themselves heard, you end up with a bad reputation for your industry. Publicity-seeking politicians see to that.

Yes, it's time for food manufacturers and distributors to substitute a "clean house" purpose for the "others-get-away-with-it" drifting. And time to substitute courage for timidity and report violations.

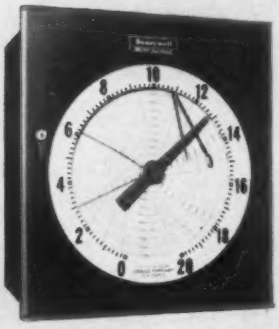
It can be done! The expenditure of $1.50 for stamps to alert FTC could clean up a major market through fear of federal action.

As for FTC—let's see more action and fewer threats.

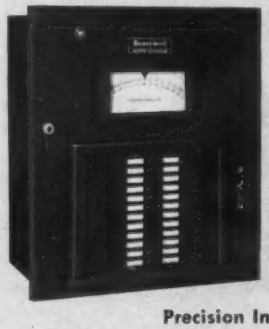
Multiple-Point Strip Chart Recorder



Circular Scale Controller



Circular Chart Controller



Precision Indicator

Improve your process with simple, easy-to-maintain *ElectroniK* instruments

USE *ElectroniK* INSTRUMENTS WHEREVER YOU NEED PRECISE, SENSITIVE MEASUREMENT

•

Unmatched variety of models for pH, redox, strain, temperature, pressure and other variables.

•

Easy maintenance — standard parts and assemblies are readily available and simply installed.

ElectroniK recorders and controllers are actually simpler to use and maintain than comparable mechanical instruments . . . they're far more accurate, more versatile, and have faster response, too.

You can mount *ElectroniK* instruments as far as 1500 feet from your process without loss in performance. That means you can concentrate all process data on centralized instrument panels . . . and thereby increase operating efficiency. There are no capillary lines to break . . . no need for instrument recalibration in case of a broken wire, which is easily spliced.

Use *ElectroniK* instruments in research, for inspection and accounting records, as well as in processing. They measure any variable that can be converted into a proportional electrical signal.

Get complete details from your nearby Honeywell field engineer. He's as near as your phone.

MINNEAPOLIS-HONEYWELL REGULATOR CO., *Industrial Products Group*, Brown Instruments, Wayne and Windrim Avenues, Philadelphia 44, Pa.

Honeywell

H HONEYWELL

First in Controls

(Advertisement)

THE STORY OF NATURE'S YELLOW

BETA CAROTENE

WHY IS COLOR SO IMPORTANT?

You pick the big, red, beautiful apple, and every bite seems to taste better because it's so nicely red. The good, thick steak looks crusty brown, and the center's a wonderful pink. Colors call to your appetite. The best-*looking* foods seem to be the best-*tasting*. Brillat-Savarin, who wrote so well and wittily about the taste of things, said "The eyes are eaters." You don't need psychological tests to prove that foods must *look right to taste right*, but such tests *do* prove it. And your own taste buds clinch the argument.

Life would be drab without color, if everything we looked at was black and white, or some uninteresting gray. Imagine sunlight that wasn't golden, a sunset without its reds, vegetation with no green, a sky that is never blue. Our idea of beauty is based on color, on color contrast, and color harmony, at least as much as on shape and symmetry.

Some foods are naturally attractive. Some must be made so. The most enticing cooking aroma, the most delectable flavor, will be wasted if the food does not look right. Millions of oranges, picked when their skin color is an uneven greenish brown, must be dipped in liquid orange coloring solution to make them *attractive* oranges. Butter and margarine must be a good yellow for widest appeal. Gelatin desserts, children's lollipops and hard candy, soft drinks, ice cream, and many other foods must be colored for consumer acceptance. Man so often must help nature out!

Appetizing, natural-looking colors are among the best food salesmen of all. Making foods look better, making them taste better, making them nutritionally more valuable are practices everyone accepts and expects. Any improvement which allows us to enjoy more fully the gifts placed at our disposal is beneficial. Adding color is such an improvement. Food processors can now add pure Beta Carotene ROCHE*, to give natural color and vitamin A value to their good foods.

BETA CAROTENE

One of the Newer Words You See on Food Package Labels

More and more manufacturers and processors are using beta carotene—the safe, TRUE CAROTENE yellow color—to make their good foods bright, appealing, and more nutritious.

Because our federal government requires practically all food processors to declare ingredients on their package labels, you will see phrases similar to this: "Artificially colored with beta carotene." When you notice this on the labels of foods such as margarine, yellow shortening, cake mixes, and bakery products, you can be confident that this coloring, carotene, one of nature's own pigments, is safe and beneficial.

A lot of the pleasure food gives comes from the good looks of good food. No one eats dinner in the dark. Food not seen is not enjoyed.

*Roche—Reg. U. S. Pat. Off.

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Maybe some of you will not be too familiar with these terms used in this text:

CAROTENOID. *The carotenoids are a family of color compounds found widely distributed in nature. They account for the characteristic colors of many flowers, fruits, leaves, and vegetables. The ending "OID" is the way the chemist says: "like carotene," because all the carotenoids are similar, chemically, to beta carotene, most widely distributed, important member of the carotenoid family.*

CAROTENE, *(sometimes spelled* carotin*), is a colored compound or substance occurring in certain vegetables and fruits. In pure form its color is deep violet-red; in dilutions its color is yellow. The Greek-letter prefix,* beta, *used with the word carotene, is applied to distinguish this compound from* alpha *and* gamma *carotene—compounds which have somewhat similar chemical structure but are not nearly so important in human nutrition. In fact, the pure alpha and gamma forms are only laboratory curiosities and are not available commercially.*

Beta Carotene is a PROVITAMIN. *Provitamins are substances which are changed in the body into vitamins. The body has a mechanism by which the carotene is converted into vitamin A which we all need for good health.*

CAROTENE IS NO STRANGER

Carotene is as common as carrots, or sweet potatoes, or green leaves, or the natural yellow of butter. Carotene is the pigment which makes carrots carrot-colored and gives the orange-color to sweet potatoes. The very name carotene, of course, comes directly from the word carrot.

Carotene and other carotenoids, with chlorophyll, are present in the green leaves of plants. You see vivid proof of it when tree leaves turn yellow in fall.

THE CAROTENOIDS—A LARGE FAMILY WITH MANY RELATIONS

Nature has many pigments: the brilliant—or dull—colors of feathers, the delicious red of a ripe strawberry, the many shades of green in leaves, the blue of cornflowers, the lavender of lilacs, the differing browns of bark, the bright yellow of daffodils, the darker yellow of plump pumpkins.

The carotenoids make up one group of these pigments. They are among the most widespread of the naturally-occurring colors. Usually the reds, pinks, and yellows of many fruits, flowers, seeds and marine life, such as shellfish, are caused by carotenoids.

All of the colors in the carotenoid class have somewhat the same chemical structure. As their chemistry varies, so do their properties. Different carotenoids may exist side by side, as in some tomato species which contain beta carotene and lycopene, the so-called tomato red.

No one knows exactly how many carotenoids there are in nature. Some authorities believe the number may be as high as 200. One textbook lists 31 different carotenoids in fruits and seeds and flower petals of land plants alone.

Of all the carotenoids now known, beta carotene is the most useful for human beings, because of its value as a provitamin A. Not all carotenoids are provitamins. Alpha carotene, gamma carotene, cryptoxanthin (found in yellow corn) and some less well-known compounds have this property to only a limited extent.

For those interested in the more technical aspects of beta carotene, Roche has published a brochure which may be obtained on request.

Excellent reference works are available for the technically-minded. T. W. Goodwin's book "Carotenoids—Their Comparative Biochemistry", Chemical Publishing Co., Inc., New York, 1954, covers the functions of the carotenoids in plants and animals. "The Carotenoids" by P. Karrer and E. Jucker, Elsevier Publishing Co., London, 1950, gives a detailed account of the carotenoids. Paul Karrer, Professor of Chemistry at the University of Zurich, is noted for his work in vitamins and carotenoids, having received the Nobel Prize in Chemistry for his findings.

(Continued on next page)

BETA CAROTENE DESCRIBED

In pure form, beta carotene is deep, violet-red in color. The crystals are flat platelets in form. The pure product has very powerful coloring properties. For example, three grams of the pure crystals—enough to cover an American quarter-dollar—will color a half-ton of margarine to the accepted yellow color.

Beta carotene is soluble in various oils, vegetable oils being preferred for food use. It is insoluble in water.

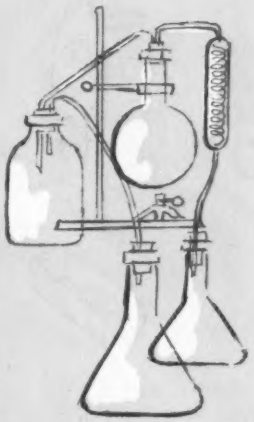
In the solutions customarily used in food processing, beta carotene Roche has practically no odor or taste, nor does it impart any odor or taste to the foods with which it is mixed.

Only a minute amount of crystalline beta carotene is needed for coloring. To simplify the measurement for manufacturers and processors, Hoffmann-La Roche has made suspensions of its finely ground crystals in vegetable oil. These are standardized, so that products with uniform color will result when they are used.

BETA CAROTENE IS A SAFE COLOR

Beta carotene is one of nature's own coloring agents. Widely present in nature, it may have first revealed itself to man when yellow-colored leaves and vegetables attracted his attention. Beta carotene has been consumed in foods for thousands upon thousands of years. Even with this evidence of safety in usage, Hoffmann-La Roche did not market its man-made "duplicate" of nature's product until careful studies showed that this substance produced no undesirable effects in test animals.

One of these tests involved the feeding of massive doses . . . so large that they were equivalent to having a 165-lb. man—every day for six months—consume 375 pounds of margarine colored with beta carotene (6,000 units of vitamin A activity per pound). Elaborate studies proved there had been no harmful effects. These and other tests indicate that beta carotene produced by the Roche process is safe and desirable for use in foods.



A CAPSULE HISTORY OF CAROTENE

Back in 1831, Wackenroder, curious to know what caused the characteristic color of carrots, isolated carotene from the roots of that vegetable.

Based on his observations, Willstätter established the empirical formula for carotene in 1906.

In 1919 the *vitamin A activity* of the carotenoids was discovered by Steenbock.

Between 1928 and 1930, Zechmeister, Karrer, and Kuhn established the *constitution* of carotene and assigned the structural formula.

In 1953, the successful *synthesis* of beta carotene was made by Hoffmann-La Roche. This was done by chemists who *duplicated* nature's own color as a compound in the laboratory. Their work was made easier by the preceding investigations. Pilot plant production was achieved in the same year followed by commercial production in 1954.

Thus, a period of 122 years passed between the discovery of carotene in nature and its successful duplication by Hoffmann-La Roche scientists. Carotene, however, has been used by food processors in the United States for many years. Natural extracts have been made from various sources—carrots, palm oil, alfalfa—for more than a quarter of a century. None of these natural extracts, however, has the purity of the man-made substance produced by Hoffmann-La Roche.

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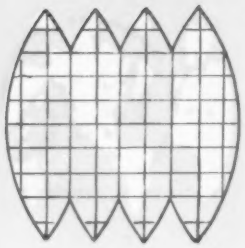


HOW IS BETA CAROTENE USED?

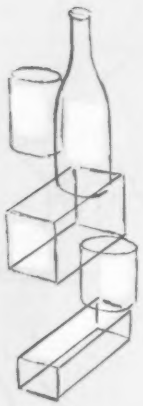
Beta carotene Roche is now used as a safe, natural yellow coloring agent for such foods as:

Margarine	*Cheese*	*Yellow Baked Products*
Shortening	*Salad and Cooking Oils*	*Beverages*
Lard	*Confections*	*Ice Cream*
Butter		

It is capable of being used in almost any processed food. Developments at Hoffmann-La Roche have made it available in oil suspensions for use in fatty foods, and in special water-dispersible forms for other foods. Other forms are in the development stage.

An acceptable coloring in the United States since 1947, beta carotene has also received official sanction in such other leading countries as Austria, Australia, Denmark, Finland, Brazil, Germany, Great Britain, The Netherlands, Norway, Switzerland.

Food processors are invited to ask Hoffmann-La Roche for technical help on the use of beta carotene Roche in their products.



WHAT ARE THE NUTRITIONAL QUALITIES OF BETA CAROTENE ROCHE?

Beta carotene is a provitamin; it is converted into vitamin A in the healthy human body.

The biological activity of beta carotene is measured in units of vitamin A activity. For instance, one gram of beta carotene equals 1,666,700 U.S.P.* units of vitamin A, while a gram of vitamin A (alcohol) itself equals 3,333,300 U.S.P. units. The U.S.P. unit and the International Unit are used for convenience in measurement. One U.S.P. unit is equal to 0.344 micrograms of vitamin A acetate.

Of the six provitamins A that are known to exist in nature, beta carotene is the most widely distributed, the most potent in vitamin A activity, and most readily available to us.

Beta carotene Roche is more than just another efficient food color. It has a nutritional benefit, too, through its ability to provide vitamin A value. As it is so intimately associated with vitamin A, it comes close to being an essential substance in itself.

WHY WE NEED VITAMIN A

We need vitamin A to guard the health of our eyes and our skin and to build our resistance to infections. People deprived of vitamin A in their diet are subject to nightblindness, which is a failure or imperfection of the vision at night or in dim light.

We need vitamin A to help maintain the health of membranes and other specialized tissues. We need vitamin A for normal growth from infancy through childhood to maturity.

According to the recommendations of the Food and Nutrition Board of the National Research Council, healthy adults in the U. S. A. should receive 5,000 U.S.P. units of vitamin A daily in their diet. The requirements for pregnancy, for infants and children, vary above and below this amount. It has been estimated that two-thirds of the vitamin A activity in the average American diet is derived from carotene and related compounds in foods. Therefore, it is important that we eat daily adequate amounts of green, leafy vegetables, carrots, fruits, as well as processed foods which have been nutritionally improved with beta carotene Roche.

**U.S.P. means United States Pharmacopeia, an official compendium of standards.*

(Continued on next page)

The Story of Nature's Yellow — Beta Carotene

OPENING ANOTHER DOOR TO THE FUTURE

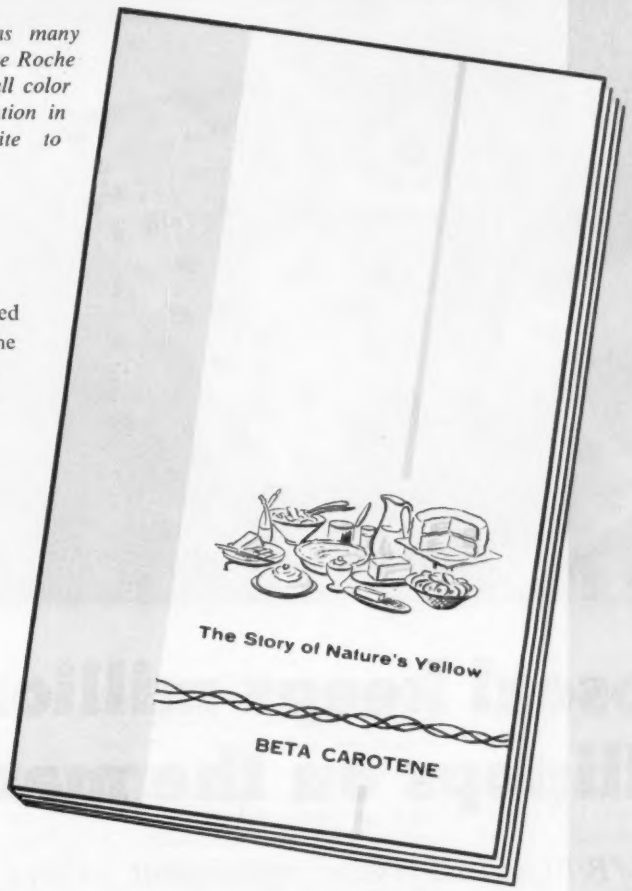
The successful synthesis of vitamin A by Roche scientists led to the discovery of the synthesis of beta carotene. The synthesis of beta carotene will no doubt lead to the manufacture of other carotenoids.

Right now, scientists are working on the processes necessary to produce other safe coloring agents of the carotenoid family. For example, work is being done on "duplicating" lycopene, the dominant red of tomatoes, and on cryptoxanthin, a yellow color found in corn.

The development of pure beta carotene Roche is really only a beginning, not an ending.

You may have as many copies of this new 20-page Roche brochure illustrated in full color as you need for distribution in your organization. Write to Dept. FE-4.

Food processors are invited to ask Hoffmann-La Roche for technical help on use of beta carotene Roche in their products.



Vitamin Division

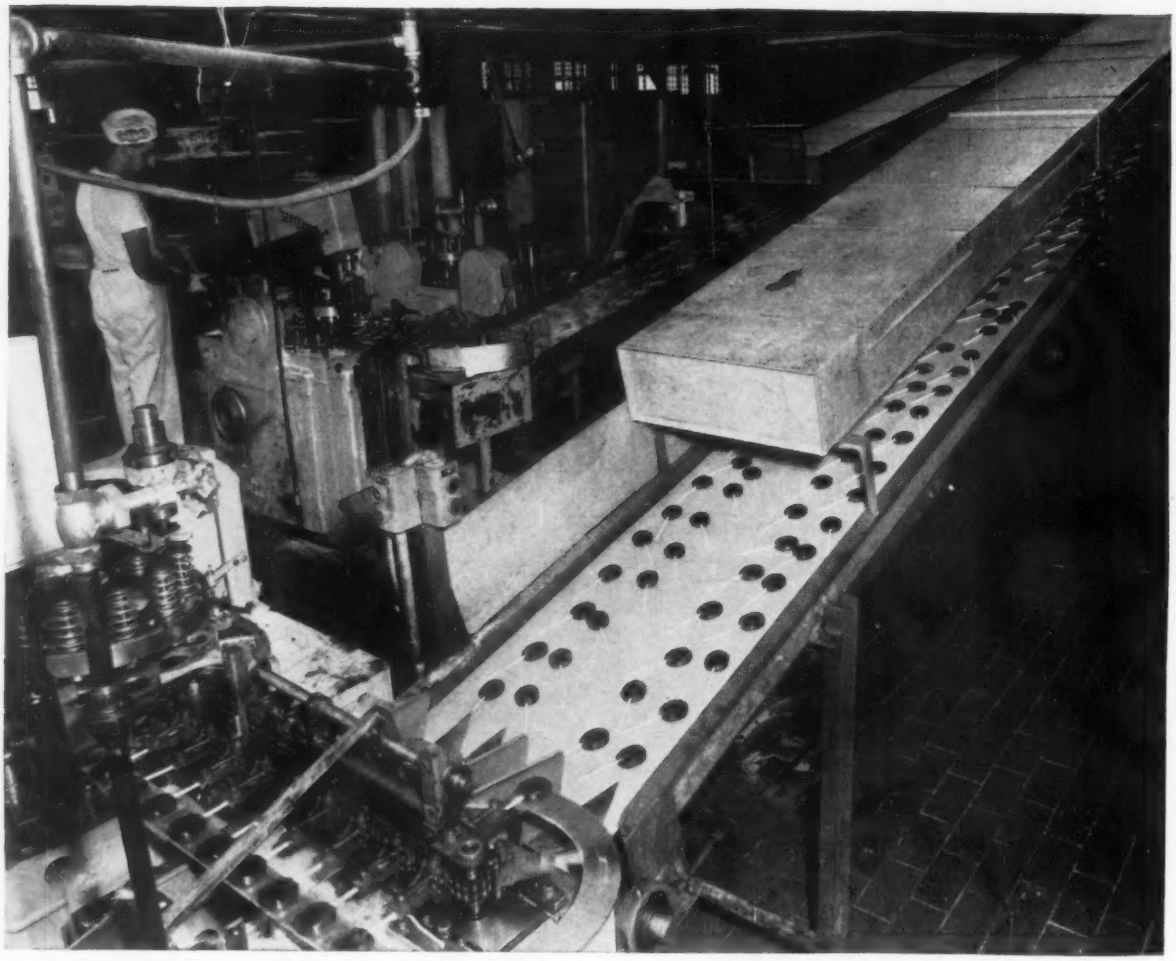
HOFFMANN-LA ROCHE INC.

Nutley 10, New Jersey

In Canada: Hoffmann-La Roche Ltd.
1956 Bourdon Street, St. Laurent, P. Q.

For more data, circle this page number on card at back →

B.F.Goodrich report:



Koroseal keeps millions of lollipops on the march

A typical example of B.F.Goodrich product improvement

Problem: In this plant, lollipops by the millions are made without ever being touched by workers' hands. Conveyor belts carry them from the machines that form them to other machines where they're wrapped and packaged. At first, belts made of canvas were used. But, too often, the hot, tacky candy would stick to the canvas, cause messy jam-ups.

What was done: When a B.F.Goodrich distributor learned of the problem, he recommended belts made of Koroseal flexible material. The Koroseal belt has a smooth, polished surface. Even hot candy won't stick to it, food particles can't grind in. It has no odor, no taste, never gets rancid. Koroseal belts are as clean as your dishes at home and just as easy to wash.

Savings: In the past two years, B.F. Goodrich belts have kept millions of lollipops on the march, without jam-ups or trouble of any kind.

Extra benefits: Because it's made of Koroseal, this B.F.Goodrich belt stands grease, cooking oils, most acids —and just about everything else that ruins other belts. It resists cracking and peeling, never gets soft or sticky.

Where to buy: Your B.F.Goodrich distributor has exact specifications for the Koroseal belt described here. And, as a factory-trained specialist in rubber products, he *can* answer your questions about *all* the products B.F.Goodrich makes for the food processing industry. *B.F.Goodrich Industrial Products Co., Dept. M-317, Akron 18, Ohio.*

Koroseal—T. M. Reg. U. S. Pat. Off.

B.F.Goodrich

INDUSTRIAL PRODUCTS

DYNAMIC President Joseph B. Hall looks to future with excitement. His open mind takes progress in stride.

FRIENDLY SERVICE supermarket carries quality-controlled foods and bears a name well-known in Midwest and South.

What Makes Kroger Tick

To sell 7 million customers of this third-largest food chain, you must satisfy policies aimed at quality, economy, and private-label competition

FRANK K. LAWLER
Editor, "Food Engineering"

ONE of the outstanding success stories in the American food industry is currently being written by the 75-year-old Kroger Co. And the pattern of this success is significant to food manufacturers in many ways.

Serving seven million consumers in the Midwest and South, Kroger is third largest of the retail chains. It also is a large processor of private-brand foods. And it handles many products packed under its label by other firms.

Proof of Kroger's progress lies in its 58% sales gain from 1953 to '57 and a rise of 42% in net profits before taxes. In 1957, sales totaled $1,674,123,593.

Approximately 140 new Kroger markets were opened during 1957, along with distribution centers in Ft. Wayne, Grand Rapids, and Shreveport. Similar facilities are planned for Cleveland, Detroit, and Indianapolis in 1958, as well as additions to centers in Louisville, Nashville, Pittsburgh, and Toledo.

To step up manufacturing, a new $1 million instant coffee plant was put into operation in Cincinnati about a year ago, its capacity recently being doubled by another battery of extractors. New bakeries are planned for Cleveland, Detroit, Indianapolis, and Shreveport.

In five years, Kroger opened 510 new super stores and eleven new food distribution centers—including warehouse and office facilities, and additions to one center.

At the same time it has reduced the total number of stores operated to less than 1,420, in the trend to fewer but larger and more efficient markets. And it has increased its business in fast-turnover non-food items as a one-stop shopping service.

Under the dynamic leadership of President Joseph B. Hall, Kroger seems destined to become a still more important factor in the industry.

An unusual factor in Kroger's consumer acceptance is the Kroger Food Foundation, a scientific testing and development institution directed by the well known technologist, George Garnatz.

Important roles are played, too, by

two product development and research groups in the manufacturing area, one serving the Processed Foods Division, the other, Baked Foods. The Processed Foods group, directed by Norbet H. Volle and staffed with both technologists and engineers, was associated with Kroger's recent successful move into the instant coffee field.

Let's look, now, at some of the policies and practices that make Kroger tick.

Challenging Policies

Primarily a retailer, the firm holds that its first purpose is to sell products that have the quality and reputation to build business. And its aim is to provide "friendly service" so efficiently that profits are reasonable at highly competitive prices.

This embodies volumes of meaning to food manufacturers. It implies that to sell through Kroger you must (1) be efficient, (2) control quality carefully (Kroger makes nearly 3,000,000 product tests a year), and (3) build consumer demand for your products through advertising.

It also indicates that your products may have to compete with quality-controlled and closely priced brands that Kroger manufactures or has packed for its label.

In all, 22 different products are made or packaged by the chain, to the tune of 460 million lb. annually in an operation employing 3,500 of Kroger's 39,000 people. And scores of additional items are packed by outside companies under the Kroger labels.

How does the chain decide whether to manufacture a product? It is a matter of business economics. Moves are made into manufacturing as situations present opportunities to produce items as good or better than the best national brands, at a lower price. Take, for example, its entry into instant coffee processing.

Having built a customer-drawing reputation for its regular coffee, Kroger watched skyrocketing sales of the pace-setter instants with special interest. Its first move was to have soluble coffee packed under the Kroger label by an independent processor. Then as sales of this instant reached approximately a third of the chain's total coffee volume, management analyzed the advantages of putting up its own plant. The economics were favorable, so Kroger proceeded to set up advanced processing facilities—to produce "equal to, or better than, the best."

NEW HEADQUARTERS for Kroger, 25-story Cincinnati building to be completed next year by Milner Enterprises.

Here, as with many other items, Kroger has several advantages: (1) Top technical and engineering know-how, (2) excellent quality control and market-testing facilities, (3) lower costs through less expensive distribution and advertising, and (4) quick delivery to stores for maximum freshness.

Has this new coffee venture been successful? Unusually so—as proved by Kroger's recent doubling of instant production capacity.

More or less typical of Kroger's manufacturing excellence, this type of achievement is a challenge to food manufacturers. The extent to which the chain goes to check quality of Kroger-label items that it sells—and of ingredients that it buys—is no less a challenge. There are some 25 food experts in the Kroger Food Foundation, and they use the latest in modern analytical equipment and test procedures, some of which were developed by the Foundation itself. Before products are stocked in the chain's markets, they must pass Kroger quality tests. And quality must be maintained, because shipments are sampled.

The Foundation also is active in developing new and improved Kroger products. But it is equally well known for its consumer-preference testing program, which uses a panel of 750 homemakers in 20 states. Home Economist Jean Allen has Kroger items and competing products and packages tested right in the home, employing coded score sheets to prevent bias.

How Kroger Buys

Another piece of Kroger's progress is the decentralization of management, particularly buying and merchandising responsibility. Management is essentially local. Division vice-presidents make most of the decisions. They can buy from anyone, subject of course to headquarters OK on quality. But store managers have a lot to say as to what goes into their stores. So division meetings are held regularly, with the store managers present to help determine what items to stock. Annual business of the divisions ranges from $25 to $150 million.

In the past few years, the company has expanded into new areas and pulled out of one. It acquired 27 Henke & Pillot stores, a food chain in the Houston, Tex., area with a large line of non-food items. Kroger also merged with Childs Food Stores, which has 20 units in Eastern Texas, 5 in Louisiana, and 3 in Arkansas. Then it acquired 7 Big Chain Stores in Shreveport and 27 Krambo Food Stores in eastern Wisconsin. These have since been united as one division and are called "Childs Big Chain."

But even more recently, Kroger sold 16 of its stores in Wichita, Kan., to J. S. Dillon & Sons. These stores "did not fit logically into Kroger's long-range growth pattern."

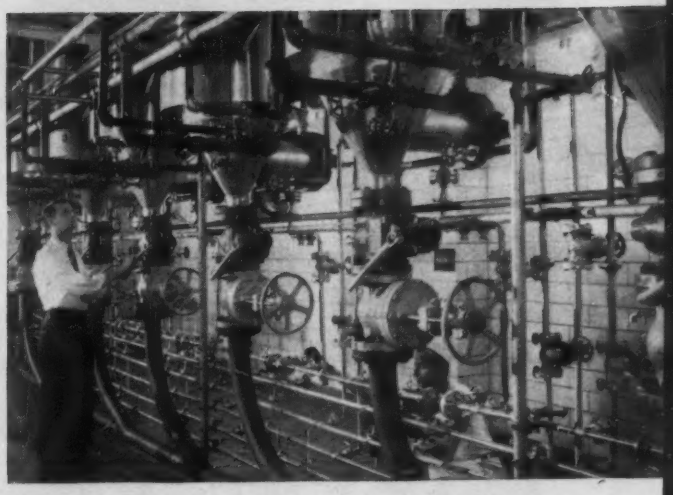
Looks to Future

Optimistic—even a little excited—about the future of the food business, Kroger is reaching ahead. A recently opened "super" supermarket in Toledo includes many innovations which will help to provide guidance in store planning, operations, and merchandising techniques. Consumers are being offered a wide variety of standard fare, plus gourmet and specialty items—even chocolate-covered ants.

Results in this store could mean still larger and fewer stores to handle food manufacturers' products. It could prove that there is a sizable mass-class market for high-priced specialty items. And it could lead to more non-food competition for consumers' dollars.

"Who knows," says Mr. Hall, "the one-stop market of the future may be so large that motor scooters will be provided to take customers around the place."

COFFEE DISCHARGES from traveling overhead grinder through chute to extractor cylinder. Grinding immediately before extracting avoids flavor loss.



BOTTOM VIEW of 12-ft.-tall extractor cylinders. Sweep-curve in discharge pipes is indicative of design that avoids pressure drop in extraction flow.

KROGER

Develops Instant Coffee Process

Good research management results in quality-improving innovations in system that goes into production without troublesome shakedown

PROCEDURES followed by Kroger in developing its advanced instant coffee process would assure the success of almost any new operation.

Coffee extraction was studied as a basic processing concept, rather than an established operation. Two years were spent in exploring every requirement and problem.

Investigation was spearheaded by the Manufacturing Engineering Division, in close liaison with the Product Development & Research Department and the Kroger Food Foundation.

Since the goal was to produce a coffee "as good or better than the best," existing instants were consumer-tested to find the best. Then suitable blends of coffee beans were determined, along with process procedures and equipment requirements and design.

Two missions were in mind each step of the way: (1) A better yet economical blend; (2) a process that would produce a superior extract, yet be more efficient and trouble-free than existing operations.

The development procedure paid off. After the extraction equipment (fabricated by Rodney Hunt) was installed and the Swenson spray dryers were ready, the process went into production in one week. Obviously, there were no serious "bugs" in it. When a second battery of extractors was installed recently to double capacity, it involved no significant changes.

Unusual Features

One outstanding feature of the process is the design of extractors and piping for uniform hydraulic flow through the ground coffee—with almost no pressure drop. Such flow assures uniform and complete extraction in all units of the system, avoiding waste of valuable material.

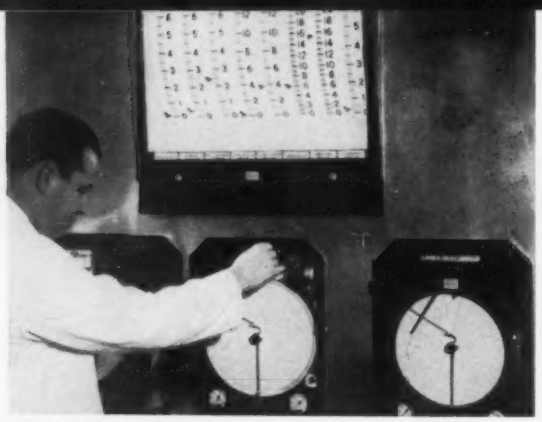
It also permits the process to operate at a relatively low pressure of 150 psi, which in turn helps to avoid plugging of screens at extractor outlets.

Contributing to free flow and to efficient extraction are type of grind and moisture content of the coffee beans. Batch roasted and water cooled, the beans are relatively high in moisture. This not only makes extraction easier, but permits special grinding. Being somewhat "plastic", the beans are coarse ground with a rolling effect that flattens the particles to provide greater surface area and speed extraction.

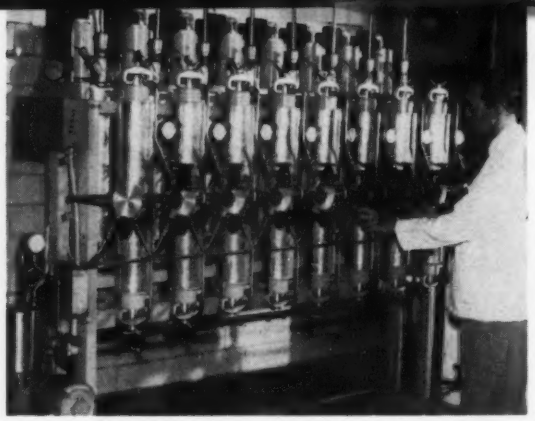
The coarse grind also minimizes pressure drop in processing and permits uniform flow through the extractor charge. There is no channeling of flow around dense spots in the coffee, with consequent irregularity of extraction and lower yield.

But there's a handicap here, too. Some production capacity is sacrified because less coffee is contained in each cubic foot of extractor volume. So more basic process capacity is required, with higher investment in equipment.

In the long run, however, Kroger considers the economics to be in its favor. Good yield and good quality are obtained, and production delays and material waste are avoided. It is expensive to dump the coffee from an extractor unit with incomplete extraction due to flow stoppage, flow



INSTRUMENTS indicate, record, and control process variables, both in dryer and extractors. Draft gage at top is important in maintaining proper flow of air for efficient, uniform drying.



CONTINUOUS STUDY of different blends and process variables is done inexpensively with pilot extractor. Miniature cylinders are heated individually with hot-oil coils. A pilot spray dryer also is used.

restriction, or to channeling of flow.

To guard against unnecessary loss of flavor quality, Kroger grinds the roasted beans immediately before discharge into an extractor cylinder. A pushbutton operated, traveling weigh-hopper and grinder assembly operates on rails above the extractors.

Extraction and Drying

The original installation (since doubled) includes seven extractor cylinders or columns, each of 22 in. diameter and 12 ft. tall. Six are in operation at a time, with one out for dumping and reloading. Zeolite-softened water at 300 deg. F. is pumped in series through the system from the most completely extracted cylinder to the freshly filled cylinder. Flow through cylinders is from top to bottom. Finished extract is cooled, filtered, and collected in a surge tank.

As extraction proceeds, the temperature in each cylinder is maintained at the desired point by steam in the jacket for a uniform high concentration temperature profile.

When extraction has continued for 360 min. in a particular cylinder, the unit is cut out manually and cooled by circulating water in its jacket. Then the grounds are blown out by 150 psi. steam and conveyed to waste for subsequent use as dump fill. The cylinder is then refilled.

Minimum concentration obtained in the extraction process is a good 31% solids.

Operation is continued 24 hr. a day, with shutdown for cleaning every 30 days. In-place cleaning minimizes costly downtime and labor, detergent being pumped through the system.

Two brands of instant coffee are produced in the extractor—Kroger and Spotlight. The former is "equal to or better than the best." The latter represents a good quality, more economical product. It is a tribute to the process that Spotlight is good enough to outsell the Kroger brand 4 to 1 with the aid of a price differential.

As critical to quality as is extraction, spray drying at Kroger is done in two stages with Swenson equipment that is 80 ft. high. Gas-heated air at 475 deg. flows downward with the sprayed liquid, leaving the dryer at 245 deg. and passing through cyclones and a dust collector. In the final stage, dehumidified air is introduced near the bottom of the dryer collection cone to cool the powder and protect quality. The drying air exits through a multi-cyclone, consisting of a battery of 4-in. dia. cylinders.

Close Cost & Quality Control

The instant coffee is passed over vibrating screens to remove any lumps, then is conveyed into a Tote Bin to be held for quality check. Density, color, moisture, solubility, foaming, flowability, floating specs, sediment, percent of dust, pH, flavor, and aroma are laboratory checked and recorded on quality control cards.

Then the bin is emptied through chutes to the hopper of a vacuum filling machine in the packaging room on the floor below. In this room relative humidity is kept at 35 to 40% and the temperature at 75 deg. for reasons of quality protection and packaging line performance.

Quality and cost control, from raw materials to packaged product, are practiced rigorously in the instant coffee operation. In addition to the Tote Bin check and records, separate performance and quality data are kept on printed forms for extraction, drying, and packaging. These records not only provide daily control, but permit weekly summarization of the entire operation, as well as monthly auditing, for accurate cost and pricing information.

Such data are important in blend and process improvements, too. And the possibilities of such improvements are continually studied with the aid of a pilot extractor and spray dryer. This equipment requires only a 40-lb. charge of coffee, compared to 10,000 lb. for the production unit.

Advance Preparation Pays

That the instant coffee process was put into production in a week does credit not only to the process and equipment design, but to advance work done by two men in the department. One is John A. Karr, instant coffee superintendent; the other, Philip Klein, a food specialist. Both had previous experience in instant coffee processing and knew the problems that could be encountered.

These men and the plant engineers sought out potential "bugs" in the process, and had many changes made before start-up. Then they prepared a prestart-up schedule covering completion dates for everything from evaluating blends to training key operators and development of data on inherent process variables.

Next they developed a "bible" by which to operate the new process, and with which to train operators. This included a process flowsheet and instructions on every phase of the process, including quality control tests.

All-in-all, Kroger set an excellent example of how to engineer a food process and put it into successful operation quickly.

PROJECT TEAM IN ACTION. It assembles, organizes, and evaluates all pertinent plant-location data. Primary is close map work (above) to range most favorable regions.

New Technique Averts Site Selection Hazards

Technical and economic talents are pooled to evaluate the many factors involved in plant location decisions, thus eliminating costly errors

IT HAS BEEN SAID that the three factors fundamental to successful business operation are location, location, and location.

—An obvious exaggeration, of course. But it effectively conveys this truth: The influence of location can greatly enhance or impede a business.

If the location is *wrong*, maximum use of resources isn't obtained, and productivity is inhibited. This is reflected in higher operating costs and higher product prices, with consequent losses to employees, consumers, and owners of the business. And the more complex the economy, the greater the cost of mistakes in location decisions.

But if the location is *right*, everybody gains.

L. VICTOR RICHES and JAMES H. FORBES

Respectively, Head of Plant Location Group, and Head of Area Development & Plant Location Research (South Pasadena), Stanford Research Institute, Menlo Park, Calif.

No Longer Simple

A few years ago, plant location revolved mostly around a few availabilities—land, labor, raw materials, markets, transportation, and services. Today, it's rarely that simple. There are many new, less-tangible factors.

Considerations of the land component, for example, have changed significantly, particularly since World War II. This is the result of the trend away from multiple-story operations. Also bearing on the question

(*Turn page*)

Finding optimum site for your specific operation calls for

...REGIONAL GROWTH PATTERN ...RAW MATERIAL

is the demand for vastly increased auto parking space.

Esthetic aspects—landscaping, setbacks, general appearance, and convenience—also augment the need for land, to say nothing of the need to provide for future expansion.

With increasing frequency, air-pollution experts participate in the evaluations. For instance, a manufacturer must know whether effluents emitted by the vicinity's plants will contaminate his products.

Conversely, the plant that discharges wastes or emits odors must know in advance whether this will create a nuisance factor for residents or other business establishments.

Questions Galore

A number of additional questions, some almost completely new, are now posed. Here are several of the most important:

- Is the pattern of current and future taxes reasonable?
- Which location is most suitable for plant-site advertising?
- Is highway dust, vibration, or noise a consideration?
- What is the area's work-stoppage record?
- What is the industrial climate?
- What will be the population, land use, and facility environment in 5, 10, 20 yr.?
- Will the present relative advantages of the area continue in the future?
- Are there strong plant-dispersion requirements?
- Where will the employees prefer to live?
- What are the community's cultural facilities?
- What are the educational opportunities, including those for graduate study?

Group Tackles Problems

Drawing on broad experience in the specialty field of area-development, Stanford Research Institute, Menlo Park, Calif., has established a group which is successfully coping with a variety of site-selection problems.

Its practical research has been providing valuable factual guidance for firms locating new plants, warehouses, distribution centers, industrial parks, and other facilities. Availability of information has improved, also the techniques.

One very useful approach is through techno-economic research. The pooling of talents of engineers, physical scientists, mathematicians, and economists meets the needs of today's highly involved site-selection assignments.

So complex has this function become that effective conclusions require the skills of market analysts, transportation specialists, land economists, and energy experts, to name a few.

For each typical study, criteria are arranged in order of importance, then are used in evaluating locations with comparative analysis employed. The studies may be carried out on several levels, according to the client's needs.

Some problems involve area analyses—such as comparisons of the Puget Sound region with Willamette Valley, or of Utah with Colorado. Subsequent checks get down to close focussing—on the urban and suburban levels.

Here are examples of recent plant-location studies, specifically illustrating basic aspects of the decisions.

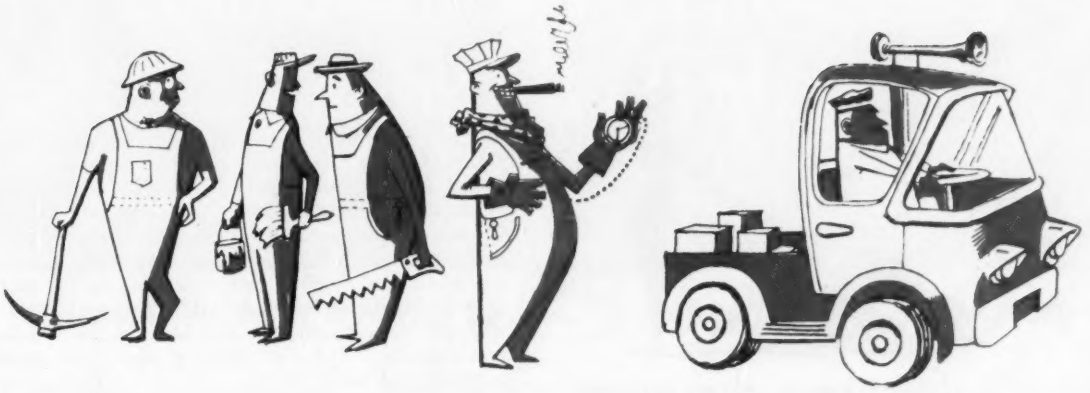
Single vs. Multiple Plants

The Poultry Producers of Central California (San Francisco) has been operating eleven plants for receiving and preparing eggs for marketing. Located near sources of supply, these facilities have employed manual methods of weighing and packing.

However, the organization has decided to mechanize its methods, with grading and packing to be done by

sharp eyeing of all factors—

CONT'D



...LABOR ...TRANSPORTATION SERVICE

a newly developed egg machine. This unit requires high volume input to be economical. And this fact has meant reorganizing to fewer processing plants—which seemingly should be located close to consumers instead of to supply.

Several questions have had to be resolved in deciding where to locate the new egg-machine plant or plants:

If the setup were to be two, or three, plants which locations would give lowest total cost? Further what would be the optimum plant size?

And what would be the factors if a single plant were chosen?

These matters had to be weighed against probable population and retail-store growth patterns of the company's market region 10 years hence, as well as today.

Points to Single Plant

The study showed that operation cost of almost any single plant would be considerably less than that for any of the several two-plant combinations checked. In other words, the one-plant costs relating to machines, labor, land, and buildings represented an economy far outweighing savings in transportation from two plants that could be located closer to markets. The differential worsened when three plants were considered.

Much attention was given to projected population growth in the Northern California market, the trends in number of retail stores, and effect of these factors on trip frequencies and delivery cost.

It was indicated that the sum of transportation costs, interest, and taxes in one of the two different urban two-plant combinations was considerably less than for the best single-plant location. However, costs of labor, equipment, royalties, and rent would be substantially more than in a single plant. About 95% of the difference was traced to the greater number of employees required by a two-plant operation.

In fact, it was determined that a saving of several cents per case could be expected through single-plant operation due solely to reduced labor costs. This saving would be realized with the expected shift in the center of population, over the next 10 years, toward the Southeast side of San Francisco Bay.

Based on this study, the company's new egg-processing plant, seen ranking as the largest in the country, will be operating soon in San Leandro, Calif.

Markets and Raw Materials

Proximity to market and raw materials sometimes is difficult to achieve when a company's product lines are dissimilar.

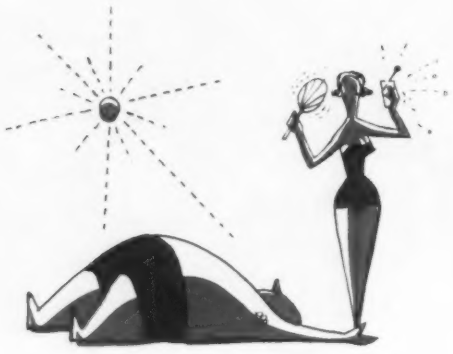
Heublein, Inc., desired to locate a new and enlarged operation on the West Coast for processing and canning various types of soup, bottling distilled spirits, and, also, distribution of other specialty food items processed in their East Coast plant.

Calculated distribution costs computed on the basis of present and anticipated-future market characteristics, were found to be slightly in favor of the San Francisco Bay area. This region was also in a more central geographical location in respect to the client's anticipated market region. Customers' shipments, handled from the San Francisco area, as a result, would receive better service. And greater economy and operating efficiency would be enjoyed by the company.

Processing and Transportation Costs

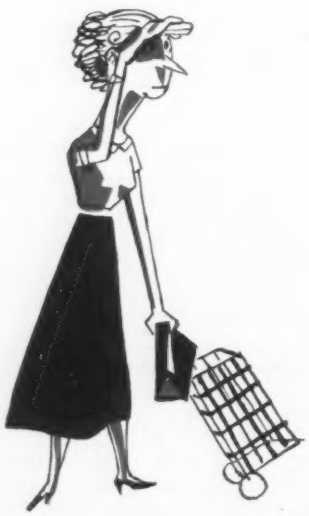
The Bay Area also offered another major advantage. The study showed it was more suitable to vegetable processing because of its proximity to growing areas of specific varieties in which the company is primarily interested. Price advantages would be gained in the purchase of other food ingredients such as dried peas, ham and ham bones, butterfat, salt and sugar. The

Further salient points in site selection—



...GEOGRAPHY & CLIMATE

...CUSTOMER SERVICE



...FUTURE MARKET AREAS

company then situated the new plant in Menlo Park.

In 1954, about two-thirds of the walnuts consumed in the U. S. were processed and marketed by Diamond Walnut Growers, Inc. (then the California Walnut Growers Assn.). One of its plants, at Vernon, prepared uncracked walnuts for marketing. At another plant in downtown Los Angeles, nuts were cracked, the meats graded and packaged for sale. The Vernon plant was relatively modern, efficient, and had sufficient production capacity. But the cracking plant was rapidly becoming too small.

The Association acquired land at Montebello, on the outskirts of Los Angeles, to house a large and more efficient shelled-walnut plant. It planned to move the in-shell operation to this location at a later date.

Weighing the Alternatives

However, doubt arose as to whether continued centralized operations in the Los Angeles area were the most economical. Several alternatives, with variations of each, seemed to merit examination. These were: (1) Build the new cracking plant at Montebello; (2) centralize all operations at Montebello; (3) construct a plant at some other location in California; (4) leave in-shell operation at the present Vernon site and build a new cracking plant elsewhere, and (5) provide facilities for a combination of these possibilities with some shelling and preliminary processing of meats at the 24 member associations plants to reduce transportation costs.

In each case factors of major concern were: (1) Shift of the walnut growing-area towards Northern California; (2) labor rates in the two areas differ significantly, and (3) transportation costs represent a key portion of total operating costs. These include movement of nuts from the 24 scattered member plants to the proposed processing sites, and finished products to Eastern markets.

Incidentals Checked, Too

Supply and demand for the next 10 years were studied in order to determine most favorable plant capacities. Processing techniques were investigated to compare costs under different methods. Then operation costs in North-Central California were compared to those in Southern California. This disclosed an outstanding factor—labor rates in the North were lower, but rising. The impact of more advanced technological innovations were analyzed.

In addition, attention of management was called to certain incidental items, such as the cost of relocating key plant personnel, and effect of changing from a well-established banking association to a new one. All these and other factors developed by the study were presented for the judgment of the management. They eventually elected to build a single plant near the State's geographical center at Stockton, Calif. —*End*

Aluminum Foil Packaging – Vitamin Retention

Report No. 14 of a Series by Reynolds Metals Company

THE ability of aluminum foil packaging to protect foods against deleterious changes in flavor, odor, appearance and freshness has been demonstrated both qualitatively and quantitatively in previous reports of this series. Moreover, this protective ability can be readily confirmed with the unaided senses of sight, taste and smell. On the other hand, losses in the nutritional value of packaged foods—particularly of vitamins—are beyond detection by human senses and can be determined only through laboratory analysis.

The importance of vitamins is, of course, well known not only to the medical and dietetic fields but also to the housewife. She knows that many food products are being fortified and she is on constant guard to get the best of this enriched value in the food she purchases. Yet the retention of some vitamins in packaged foods has not received adequate attention.

Most Susceptible Vitamins

Those most susceptible to destruction by oxidation are Vitamin A and Ascorbic Acid (Vitamin C). The presence of oxygen or an oxidizing agent is not the only factor contributing to the loss of these vitamins. Under normal storage or shelf life, for instance, it has been determined that light catalyzes and greatly accelerates this oxidation, as does heat. Riboflavin (Vitamin B_2) is readily photolyzed, or degraded, on exposure to light.

Recent studies* have been made to determine the effects of packaging on enriched, partially-baked rolls with attention focused on the retention of Riboflavin. Packaging materials tested were a transparent cellophane, a semi-opaque waxed paper and Reynolds heat-sealing aluminum foil wrap, Reyseal. The packages were stored at 74° to 78° F and subjected to light of 100 foot-candle intensity for eight hours daily. Majority of the light was supplied by fluorescent tubes, with a portion from a north window exposure.

Shelf Life Extended

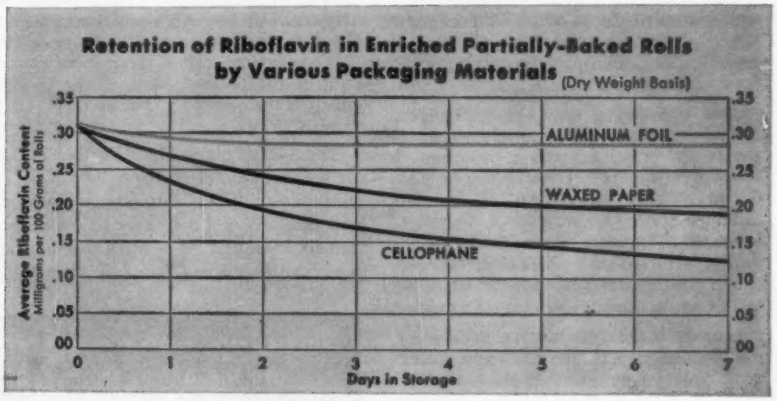
A seven-day test was run. While rolls in cellophane or waxed paper would become stale and unsaleable in less than a week, the seven-day period was chosen in order to take account of the extended shelf life made possible by aluminum foil.

Riboflavin losses in typical cellophane and waxed paper packages were significant while losses of this magnitude were not observed in the foil-packaged product. The accompanying graph of actual average Riboflavin content (dry weight basis) shows that losses after two days totaled: cellophane 40%, waxed paper 21%, aluminum 10%. The foil-wrapped rolls then suffered no further loss while losses in cellophane and waxed paper increased to 61% and 40%, respectively, at the end of the test.

Another important point is that many metals and impurities in other packaging materials actually act as catalysts in the oxidation of vitamins or otherwise accelerate their deterioration. Aluminum does not. For this reason, foods that are compatible with aluminum can safely be packaged in direct contact with it.

Aluminum foil packaging, because it keeps out moisture, oxygen and light, because it reflects radiant heat and because it does not catalyze the oxidation of vitamins, will retain foods at their highest quality nutritionally. For further information on this and other phases of aluminum packaging protection, call the nearest Reynolds sales office. Or write to **Reynolds Metals Company**, General Sales Office, Louisville 1, Kentucky.

*Tests performed for the Reynolds Metals Company by the Wisconsin Alumni Research Foundation; report published in *Food Technology*, Vol. II, page 608, 1957.



© 1958 by Reynolds Metals Company, Louisville, Ky.

Watch Reynolds All-Family Television Program "DISNEYLAND", ABC-TV.

For more data, circle this page number on card at back →

Using Salt Efficiently

by INTERNATIONAL SALT COMPANY, INC.

How to Measure Brine Strength on Different Hydrometer Scales

The most common method of measuring brine strength in industry is to use some type of hydrometer. Every hydrometer sinks into a liquid until it has displaced a weight of the liquid equal to its own weight. The scale divisions on a hydrometer are not usually of equal length, since the volume of displaced liquid increases as more of the stem is immersed.

Using a hydrometer is a relatively simple process—but reading the hydrometer scale is complicated by this fact: the scale may vary from plant to plant because hydrometers may be used to measure strength of other liquids, as well as salt brine. To help clear up any possible confusion, here are an explanation and a comparison of the five most common hydrometer scales used for measuring brine strength.

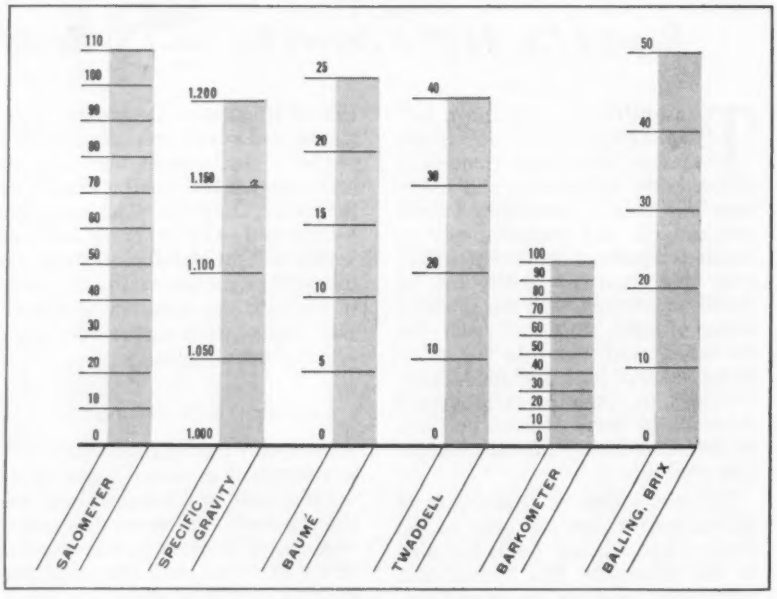
SALOMETER SCALE. This is by far the most common of all the hydrometer scales used for testing brines. The scale indicates directly the per cent saturation of the brine, reading 0° S. in pure water, and 100° S. in fully saturated brine. The salometer uses the values of Gerlach, meaning that 100%-saturated brine contains 26.395% salt by weight. Each salometer degree, then, represents 0.2639% salt.

The salometer reading expresses the per cent of saturation. Thus, a brine of 40° S. strength is 40% saturated, and contains 40% of 26.395%, or 10.558% salt by weight.

SPECIFIC GRAVITY SCALE. This reads the specific gravity of the brine *directly*. These hydrometers may be obtained with the entire length of scale covering a limited range of specific gravities, thus permitting great accuracy.

BAUMÉ SCALE. This scale was originally intended to have each degree equal a per cent of salt in the brine. But this is now only a rough approximation. The Baumé scale reads 0° Bé. in pure water, 24.6° Bé. in fully saturated brine. Also, a factor of "modulus" is needed to translate degrees Bé. to specific gravity, since the scale divisions are of equal length. This modulus has been standardized at 145, so that degrees Bé.=145–145/sp.gr.

TWADDELL SCALE. Named after its inventor, the Twaddell scale reads 0° Tw. in pure water, 40.8° Tw. in fully saturated brine. Each increase of 0.005 in specific gravity causes 1° increase on the Twaddell scale. Thus, the number on the right of the decimal point of the specific gravity, divided by 5, is the degrees Tw. For example: 1.140 sp.gr. is 140/5, or 28° Tw.



COMPARISON OF COMMON HYDROMETER SCALES

(Chart gives quick, visual relationships of readings on the salometer scale to readings on other scales.)

BARKOMETER SCALE. Used extensively for testing tanning liquors, the Barkometer scale reads 0° Bk. in distilled water, and 204° Bk. in fully saturated brine. Each increase of 0.001 in specific gravity causes 1° increase on the Barkometer scale. Thus, the number on the right of the decimal point of the specific gravity is the degree Bk. For example, 1.025 sp.gr. is 25° Bk.

The hydrometer scales described above are usually calibrated for brines at 60°F. temperature. When testing brines at other temperatures, it's necessary to make certain corrections... or to use a specially designed hydrometer. You can get a table showing proper temperature corrections, plus other data on measuring brine strength, from International Salt Company.

Using salt in its many industrial applications calls for technical knowledge and experience. International Salt Company has both—plus a continuing program of research and development in salt. These things can be put to work for you . . . in your plant . . . to help you get the most out of the salt or brine you use.

INTERNATIONAL SALT CO., SCRANTON, PA.

Sales Offices: Atlanta, Ga.; Chicago, Ill.; New Orleans, La.; Baltimore, Md.; Boston, Mass.; Detroit, Mich.; St. Louis, Mo.; Newark, N. J.; Buffalo, N. Y.; New York, N. Y.; Cincinnati, O.; Cleveland, O.; Philadelphia, Pa.; Pittsburgh, Pa.; Memphis, Tenn.; and Richmond, Va.

Service and research are the extras in STERLING SALT

PRODUCT OF INTERNATIONAL SALT COMPANY, INC.

Ole Sage Episode

Can *Worker Attitude* Studies Give You the Answers?

Ed shot out his finger in emphasis: "No employee would answer a hundred or more questions if he weren't interested."

"THOUGHT YOU FELLOWS would be interested to know," volunteered Ed Strong, "that our Zenith Canning Co. employee magazine is now gradually being changed along the lines discussed here at these Guff & Gripers meetings."

"A tribute to Ole," badgered Batt Bulwark, works manager of Mull & Mull Co. "Take a bow, Maestro!"

Ed resumed: "Si Worth, who's handling it for us, couldn't make it here today. However, I still have some 'how' and 'why' questions about company publications."

"Let's have 'em," bellowed Batt. "Then maybe we can finish with communications and company papers —and get on to something else."

"Well, taking communications generally," said Ed, "how can you tell how worthwhile each of your different communications is? And as for magazines, how can you find out whether or not your employee sheet is really effective?"

Batt grumbled: "If you ask me, those are both the same question. Right, Ole?"

"Not necessarily," Ole disagreed. "For example, a company may be doing a pretty fair job of communicating with its workers even though its employee paper is feeble —or even if it hasn't got a paper. However, there certainly are good means of evaluating methods of communicating."

"One way to find out how good communications really are," said Barney Hasbrook, "is to measure ye olde morale factors, especially absenteeism and turnover. Then compare the trends of your accidents and grievances. And finally take into account your production rate—I mean output per worker."

Barney reflected a moment, then added, "These things put a finger on the level of morale and thus the worth of communications. Still, as Ole says, your general communications may be doing a fair job even if your magazine is a waste. So, Ole, how do you check on the publication? Do you turn to attitude surveys?"

"That's the ticket, Barney," Ole agreed, "I consider the attitude survey the surest way of checking on communications, including the reception and effectiveness of the employee publication."

"I can't swallow that idea," blurted Batt. "First you'd have us spend much too much on publishing a company magazine—then you want us to spend still more to find out if the magazine is any good. Doesn't make sense!" Batt thumped the table emphatically. "And just how much per employee does an attitude survey actually cost, Ole?"

"Some cost less than 50¢ per employee," Ole explained, "while others range up to $20-30 per return. The cost of a *questionnaire* survey aimed only at learning about the effectiveness of the employee magazine should not be excessive. Of course, the *interview* survey costs more—but also may reveal more."

He continued, "When an organization makes a survey to learn about its employee magazine, it would seem logical for it to try to learn additional facts about employee likes and dislikes, approvals and gripes."

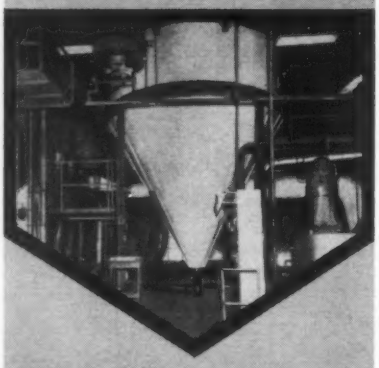
Batt shook his head questioningly, but did not interrupt as Ole concluded, "The information thus received can be very valuable to management, *and in the end to employees, too.*"

"Umph!" Batt finally cut in. "You say that even at such high costs these surveys are worthwhile. How come? Give us your reasons."

"Though they're not a new tool of management," Ole replied, "attitude surveys have now come into important usage. The number of organizations relying on them increases each year. However, what's very indicative of their value is the fact that most of the companies that try them generally continue them. That," he concluded, "seems to me proof they pay off." .Turn page

IVAN C. MILLER
"Food Engineering"

CUSTOM SPRAY DRYING OF HEAT-SENSITIVE FOODS



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"The sincerity of the replies will directly reflect management's sincerity in putting the queries"

Ed broke in: "Besides finding out if your employee paper is on the beam, what else is usually included in these 'morale' surveys, as I believe they're sometimes called."

"Hundreds of different questions are asked and answered," replied Ole. "A few of the surveys have run up well over 100 separate and different questions."

Ed exclaimed: "That clears up something for me—and it's a big point." He shot out his finger in emphasis: "No employee would answer a hundred or more questions if he weren't interested!"

Ole smiled. "They're definitely interested. And it's not unusual to find a noticeable upswing in employee morale immediately following an attitude survey, even before any action toward indicated corrections or improvements has been taken by management."

"Would you," requested Ed, "give us an outline of a few of the areas usually covered in one of these surveys?"

"In general the questionnaires cover what employees think of pay and hours, fringe benefits, the company, the management—their opinions of relations with foremen, supervisors, and their associates on the job. Usually sought also are their comments on the plant—lighting, heating, safety, working conditions, the cafeteria, the locker rooms. They're asked, too, to say what they like and what they don't like about their jobs. And it's always advisable to inquire how they rate the company's publication, what they want in it or what they don't want or don't like."

"If a great many questions are to be asked," said Milt Sorrenson, "it's my guess a written questionnaire form is used. Am I right, Ole?"

"Yes, where there are many questions, the written form is preferred," agreed Ole. "However, the interview survey is chosen in certain circumstances, even for answers to a number of questions. Both methods have their place, and occasionally a combination of the two proves best.

"But," he warned, "when to use which is a matter for those with ample experience to decide—according to the situation and circumstances of the particular company."

"I take it that attitude studies are run off in 'secret ballot' fashion—always anonymous," Barney commented.

"Only a very few are not," asserted Ole. "Probably less than 1%."

"If questionnaires were signed," Batt boomed, "I wouldn't believe a word of them. Workers'd be afraid to say what they thought. And I wouldn't trust 'em much more even if they were anonymous."

He chuckled sarcastically. "I sure can imagine just how some of the monkeys at our place would enjoy harpooning the company in an anonymous questionnaire, and lousing up things generally. You can't believe the studies either way."

He went on: "And if you can't believe 'em, how can management gain anything from them? So how can they be worthwhile? And what's more, wouldn't the kind of questions asked be apt to put wild ideas into the workers' heads? I say, let sleeping dogs lie!"

Ole said earnestly, *"The sincerity of the replies will directly reflect management's sincerity in putting the queries. . . And furthermore, the dependability will be determined by the simplicity and clarity of the questions as well as by management's frankness and straightforwardness.*

"Several universities, among them Michigan and Chicago, have conducted numerous attitude studies and so built up extensive experience. Also, consulting firms have specialized in these surveys. So it's readily believable, I hope you'll agree, that those with this long know-how can quickly detect any insincerity in the answers. Also, they can gain considerable insight—through the tenor of the replies—into existing conditions in the company in question.

"Let me further assure you," Ole emphasized, "that almost all questionnaires are honestly and frankly answered if the employee is certain of anonymity, if the company is sincere in its presentation, and if the employees believe that the company will try to act on their honest answers, or at least truthfully explain the specific cases where action isn't feasible."

Ed spoke up: "I still have one ques. . . ."

"You got ONE question?" Batt interrupted with a bellow. "I've got a thousand! Every time Ole spouts off, I have 'em. But look at the clock. They'll have to be held over till next time."

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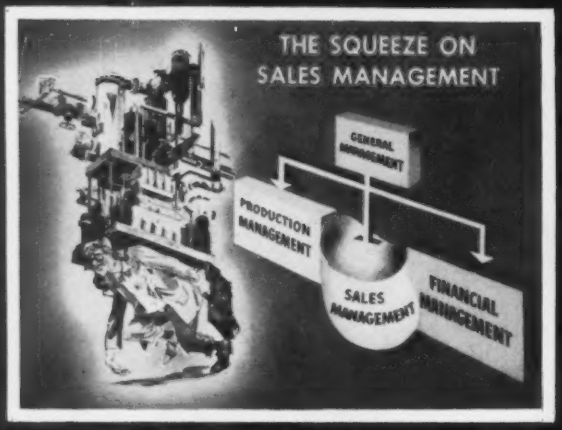
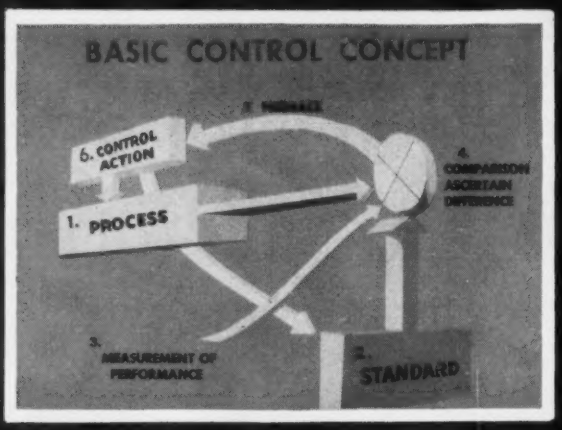


SALES INFORMATION is vital for top-level planning—because company budgets must start with sales projections. But gathering data from far-flung sources takes a woeful amount of time. So primary need today is rapid collection-evaluation of essential sales facts.



6 steps of efficient control . . .
FUNDAMENTAL STEPS for smooth operation: 1. Carry out prescribed process. 2. Compare performance vs. standard. 3. Measure results. 4. Note differences. 5. Feed back data. 6. Take action.

MARKETING

Stronger Sales Control

By slashing the time-lag and reducing the unknown variables, electronic data machines give management a tighter rein on selling efforts. Vital facts are there when you need them, and your long-range plans are on a firmer base

TODAY, your chief sales executive has the most potentially important role of the three principal functional executives—production, financial, and sales—in top management planning.

He's at the payoff point where your company's total efforts vie with the competition for the customers' food dollar. And he is responsible in most situations for projecting the sales figures which must form the starting point for your budget.

Although his is the area of functional knowledge most critically needed in top level planning, the sales chief is the most handicapped of the top three management executives. His disadvantage stems from the fact that the needed information —which covers a variety of things and which comes from far-flung operations—is stale when he finally gets it. As for tackling a problem, he can't, like the other two chief executives, easily "walk out and take a look at it."

Moreover, it has been impractical generally to provide for the collection and evaluation of much of the information the sales director needs. Especially data on those vaguely known factors that often cause the sales division to go through all the prescribed steps and still end up with "No Sale."

The sales executive gets some information from visits to customers, talks with field men, and non-statistical facts in their reports. How many times, as he faces a difficult decision, has he wished for a composite picture of what his salesmen know about the market, customers, and competitors.

▶ It is in this area that electronic data processing helps the sales division, and therefore top management.

By speeding up the feed-back of vital facts on an almost continuous basis, it makes sales controls much more effective. Information which heretofore was unattainable is processed on an orderly, timely, repetitive, and meaningful basis.

The computer reduces the sales director's travel requirements by providing a substitute for the very arduous (in his case) task of "going out to look at the problem." It permits the weighing in, on a mathematical basis, of factors now handled on an impression basis only.

How can electronic data processing fit into your selling operation? To get a concrete picture, we first have to see what sales controls are used at present.

The top sales executive's planning job is a two-fold one. First: He represents the sales division adequately from an overall viewpoint in company-wide planning. Second: He does a planning job in respect to the selling division's operations.

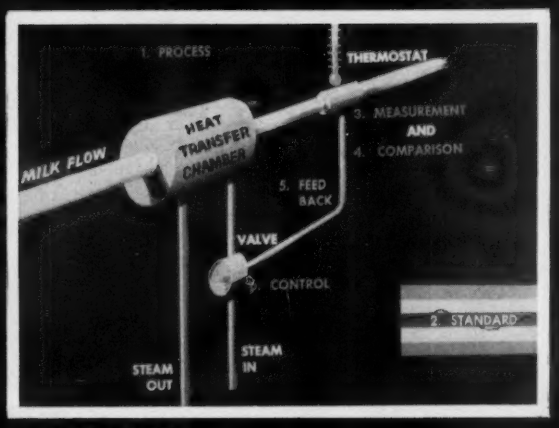
Once targets, policies, and programs are set, the sales chief must see that programs are carried out in line with policy and that sales division objectives are attained.

6 Basic Elements

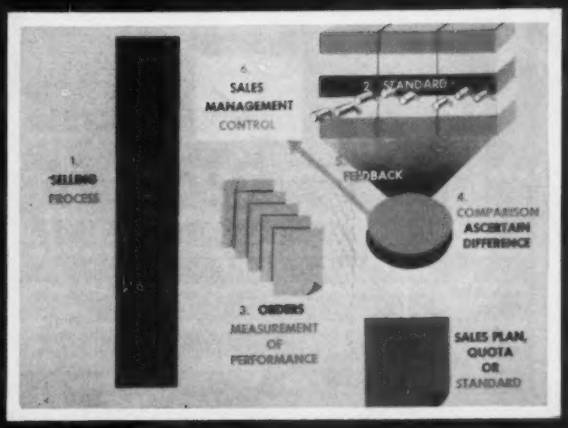
To aid him in administering and to supply much of the knowledge needed for planning, the sales executive—as well as the production and financial chiefs—uses a series of controls. The control concept involves what may be called the 'six basics'—

1. The performance of a pre-

THORNTON W. SNEAD
Partner, Booz, Allen & Hamilton, Chicago.



...in manufacturing...
MILK ENTERS steam-heated coil (Step 1), where temp. must be raised to 145 F. (2). Temp. reading taken (3). If it's not 145 F. (4), info relayed to control point (5), and steam valve adjusted (6).



...and in sales.
SAME SIX STEPS apply to sales control. Salesmen selling retail store (Step 1) has quota, (2). His orders (3), are compared (4) with quota and variations noted (5). Adjustment is then made (6).

the *Computer* Way

scribed function—i.e., the **process.**

2. A **standard** against which the performance or results are compared.

3. **Measurement** of performance or results.

4. **Ascertaining** the differences—over or under the standard.

5. **Feed-back** of information to control points.

6. **Control action**—resulting in a change in the process, the standard, or both.

Each of us uses this control concept in everyday life. For example, you take a shower (*process*). The water feels cool (*measurement* of temperature by your senses). The feeling of coolness is a comparison with body temperature (*standard*). The difference (*ascertaining*) between water temperature and body is relayed (*feed-back*) to the control point—your hand on the faucet—and you turn on more hot water (*control action*).

Now see how this control concept is applied in manufacturing:

In a pasteurization plant, the milk enters a heat transfer chamber containing a steam-heated coil (*process*). The milk should be heated at 145 deg. F. (*standard*). Temperature readings are taken (*measurement*), and deviations from 145 F. are noted (*ascertaining*). The differences are *fed-back* to a valve, and the process is changed (*control action*) as required.

Finally, let's apply this control concept to sales:

A salesman sells your product to retail food stores (*process*). He has a sales plan and quota (*standard*). His actual orders (*performance*) are compared with the quota (*ascertaining the difference*), and the information is sent (*feed-back*) to sales management.

The sales director then takes steps (*control action*) to see, first, that the prescribed process is being followed and, second, to make possible a change in the process or standard.

Time and the "Unknown"

Our illustrations suggest that control in sales is quite the same as in production or daily living. Not so, however—for there are two elements which cause particular difficulty in the sales field.

The first is simply "time."

When the water in the shower becomes too hot, you adjust the control faucet in mere seconds. When the temperature in the milk pasteurizing vat is off, performance is corrected almost immediately. Unfortunately, things don't happen that fast in a sales situation.

The salesman makes his weekly report. By the time it reaches headquarters, three days, say, have elapsed. Clerical tabulating takes two more days. Another day goes by while the sales analyst checks actual orders against quotas.

The analyst's report is sent back to the district supervisor for information and action—another day or two. The supervisor goes out to the salesman's territory the next day and says:

"What's the trouble, Smith? Your sales are below quota."

"What do you mean," says Smith. "I was 20% over last week, and in two days this week, half my quota is made."

At this point, the supervisor mumbles apologies and says: "These blasted sales reports are always too old to be of value!"

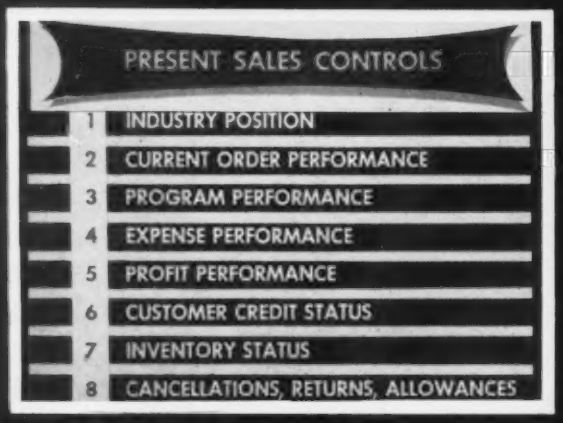
The second element is the "unknown."

When you go through the prescribed steps in a production operation, you are virtually sure of an end-product. Often in selling, however, all the prescribed moves are made but no sales result. Many factors beyond the scope of present-day sales controls bear upon this result.

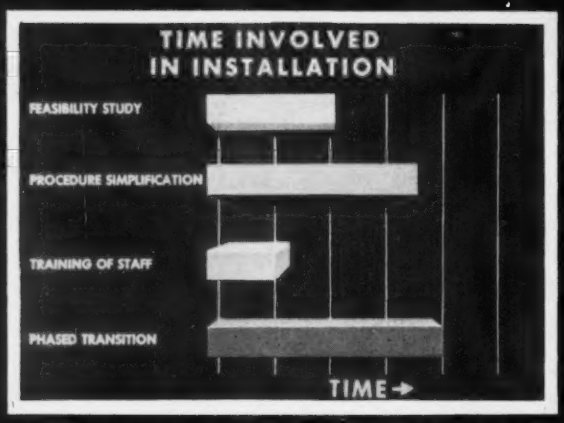
8-Area Attack

The actual controls used by up-to-date sales executives generally cover these eight areas of knowledge—

1. Industry position—total volume of all companies in the field by type and price categories, geographical areas, and distribution channels (user, retailer, broker, and whole-



TIGHT GRIP on selling activities comes from knowing the facts in these eight important fields of knowledge. Furthermore, applying basic control concept to each field shows where improvements can be made to correct weak spots.



PUTTING COMPUTER to work is no overnight affair. From 3 to 5 yr. can elapse between your feasibility study and time machine's in action for you. Length of chart's bars roughly indicate relative time involved in each step.

saler). Includes information for the past, present, and projected future, as well as company data for comparison.

2. Current order performance—company sales quotas for product groups, regions, districts, territories, distribution channels, and by time periods. Includes actual order information for comparison against quotas.

3. Program performance—definition of the selling methods and prescribed promotional devices, degree to which they're being followed, and variances involved.

4. Expense performance—budgeting of each classification of selling expense for sales division and its segments. Includes actual expense and a comparison with the budget.

5. Profit aspects—profit objectives or standards for product lines at each price sold, covering territories, accounts, and size classifications of orders. Includes at least spotchecks of actual performance in these respects and differences from standards.

6. Customer credit – established credit limits for all or certain accounts, unpaid account balances of each, and the resulting amount open-to-sell.

7. Inventory—of standard stocks by type and price categories in each branch and at a central point. Also notes the flow of goods and "flags" variances from the standard. Also studied are the status of shipments vs. orders and the resulting backlog as compared to the norm.

8. Cancellations, returns, and allowances—establishing the standard amount normally expected in these categories, recording actual performance against them, and indicating variances from normal.

It is important to note that the six basic elements of the control concept (described at the start of this article) have their place in each of the eight sales controls detailed above. For example, here's how the basic concept is applied to profit performance:

The **process** (Step 1) consists of setting and maintaining prices. It includes selling a favorable combination of products in prescribed amounts on the income side, and of carrying out the sales program economically on the outgo side.

The **standard** (2) is a desired profit margin to cover general and administrative expenses and profits. Performance is **measured** (3) by recording actual sales, less the cost of goods sold, plus selling expenses.

Ascertaining of the difference (4) is through comparing to the standard. A report from the financial division to the chief sales executive comprises the **feed-back** of information (5). **Control action (6)** could consist of altering the process by: (a) Changing the price structure; (b) finding ways to effect the product combination, or quantities, favorably on the income side; and (c) reducing expenses on the outgo side.

How Computers Fit In

What are the benefits that electronic data processing can bring to these sales controls?

Obviously, the computer's high speed will reduce the time-lag that handicaps sales executives today. Some machines can handle several million characters per minute—adding, subtracting, multiplying, dividing, and making logical comparisons.

Combining this speedy operation with telegraphic communication can reduce the time between performance of the process, determination of the difference, feeding back of needed data to control points, and control action.

A second advantage is consistency. The machines go on doing the same thing, following instructions to the letter, hour after hour and month after month. All this without getting tired, fed up, or throwing temper tantrums.

A third advantage is that the machines are extremely accurate—provided, of course, that the input is correct.

A fourth favorable characteristic, stemming from the machine's speed, is lower costs when the application is appropriate. This especially derives where a large volume of routine operations is handled.

Speed of operation and lower costs make practical the gathering and processing of much more information than is collected and sorted by manual methods. Many more combinations and correlations of data can be put to use by the sales executive —helping to reduce the unknown factors that handicap sales decision-making today.

The above article is taken from a talk given at last month's convention of the National Assn. of Frozen Food Packers in Chicago.

What's Needed to Push Frozens?

. . . Promotions with more muscle, declares this marketing expert. Upsurge in high income, better educated families gives freezers ripe opportunity

family expenditures for frozen foods

	ANNUAL PER FAMILY SPENDING FOR FROZEN FRUITS & VEGETABLES	PERCENT OF TOTAL FOOD DOLLAR	PERCENT OF FRESH AND CANNED FRUITS AND VEGETABLES
BLS (1947-1950)	$ 6.00	.5%	6.3%
USDA (spring 1955)	$10.00	.9%	10.2%
LIFE (1955-1956)	$14.00	1.3%	11.6%

UPSURGE in frozen food consumption is impressive. Rounding figures to nearest dollar, table covers three surveys of family food expenditures. Bureau of Labor Statistics found 1950's average family spending $5.72/yr. for frozen fruits and vegetables. USDA 5 yr. later reported $10.40, and "Life" in '56 poll edged outlay up further to $14.

ASSOCIATION ADVERTISING
1951-1956

	MAGAZINES	NEWSPAPERS	TOTAL
1951	$19,955,911	$7,978,176	$30,672,804
1952	21,695,641	8,512,315	32,959,637
1953	21,960,692	8,589,475	34,419,811
1954	23,905,779	9,716,985	39,951,330
[illegible]	[illegible]	[illegible]	[illegible]
1956	28,132,731	12,890,004	44,280,053

SHARP INCREASE in advertising by food industry associations was made in 1951-56 period. Reason: Promotions do broad gage, image-building, informative job. (Illustrations courtesy "Time" magazine)

POPULATION TRENDS assure a very profitable growth potential for frozen foods. **But freezers will have to upgrade their merchandising if they're to win long-range benefits.**

Key favorable factor in tomorrow's population pattern will be the significant increases in the segments of people who are the biggest users of frozen foods—the higher income, better educated families.

So reasons Frank A. Stewart, *Time* magazine, who spoke at last month's convention of the National Assn. of Frozen Food Packers in Chicago.

He points out that Census Bureau projections indicate that the number of top bracket families (with pretax income of $10,000 or more) may jump from 4.3 million in '56 to 4.8 million by '60—an 11% gain. This is almost double the 6.6% gain predicted for the civilian population as a whole in the same period.

Better educated families will upswing sharply in the 1955-65 period, Stewart adds. Government forecasts suggest that while total population will climb 15% in the 10-yr. span, high school enrollment will jump 50% (from 7.9 to 11.9 million), college enrollment will leap 68% (from 2.9 to 4.9 million), and college graduates will spiral upward 47% (from 6.7 to 9.9 million).

According to Stewart, college educated families eat three times as much frozen foods as their grade school counterparts, and household units earning $10,000 or more a year spend $31 annually on frozen fruits and vegetables compared to $14 for all families.

Where New Spark Is Needed

Freezers may miss out on the opportunity posed by these population trends unless they bolster their advertising programs, Stewart holds.

Three factors indicate that frozen foods may not be getting the advertising support they deserve, he adds. They are: (1) The number of brands doing two-thirds of the advertising can be counted on one hand; (2) only 9.1% of the advertising spent for all fruits and vegetables is done by freezers, though their products account for 11.6% of total consumption; and (3) very little of the advertising has been devoted to market development.

How can freezers add muscle to their advertising dollars? Stewart has these suggestions:

1. More educational-type promotions that stress the nutritional, convenience, and waste-saving benefits.

2. Stepped up association campaigns. . . . This has worked successfully in other fields. One example: California prune growers, who began their program in '52, now get 23% more income per ton of fruit.

3. Increased stress on individual items as meal components. —*End*

1 INTO CARDBOARD SLEEVES go 5-loaf lots of freshly wrapped bread. These carriers make handling easier, keep bread warm and uncrushed.

2 SLEEVED LOAVES are stacked on platform truck, which is wheeled to waiting delivery trucks.

3 PLATFORM CREWMAN slides them into convenient plywood racks fitted in remodeled truck. These light racks speed loading and delivery, boost payload—in contrast to former heavy, cumbersome, space-wasting metal trays.

MARKETING

Boosts Payload —And Saves $$$

Chicago bakery ups economy and efficiency with new multi-unit handling system for retail deliveries

INEXPENSIVE cardboard sleeves and shopmade plywood shelving have spelled out three big advantages for New Process Baking Co. by—

- Boosting delivery truck payloads 30%.
- Reducing loading and delivery expenses.
- Increasing speed and efficiency in line-to-dock handling of bread.

In its new operation, the Chicago bakery packs freshly wrapped loaves of bread in sleeves for ease of handling. Platform crews shuttle the bread to delivery trucks, where it is stacked in space-saving and inexpensive plywood shelves.

The bakery got its first hint of the advantages when it adapted two retail delivery trucks to the Cube-A-Tube system, patented by R. W. Thomas, transportation director for Quality Bakers of America Cooperative. The trial was convincing and now New Process has restyled all 140 of its trucks—and revamped its loading system.

Loaves of bread that were formerly handled individually are now moved in five-loaf open-ended cardboard sleeves. Costing 15-17¢ each, the sleeves not only make handling easier, but keep the bread warm and uncrushed.

The truck shelves, of ⅜ in. fir plywood, were constructed in the company's own maintenance shops. They cost 50% less than the metal equivalent and reflect savings in weight and space. Most important is the increased truck payload. For the Chicago firm it means 30% better payload performance. Specifically, various-model trucks now carry 20-50% more loaves of bread per haul.

Old Vs. New

The added efficiency can be seen in a comparison of the old and new systems:

Formerly, individual loaves were tediously loaded into trucks by the drivers themselves. Bread was often damaged in handling. The same problems were to be seen in unloading at the retailers.

Now, however, the freshly wrapped loaves are slid into the sleeves by platform workers, who stack the filled sleeves in a wheeled platform truck. The loading crew then wheels the truck to the waiting delivery truck and fills the shelves. Thus loading is faster and more efficient.

In delivery, the driver carries the bread to the store in the sleeves, slides out the loaves, then carries back the folded sleeve.

The Cube-A-Tube handling system is being licensed to both members and non-members by Quality Bakers of America Cooperative, New York City. —*End*

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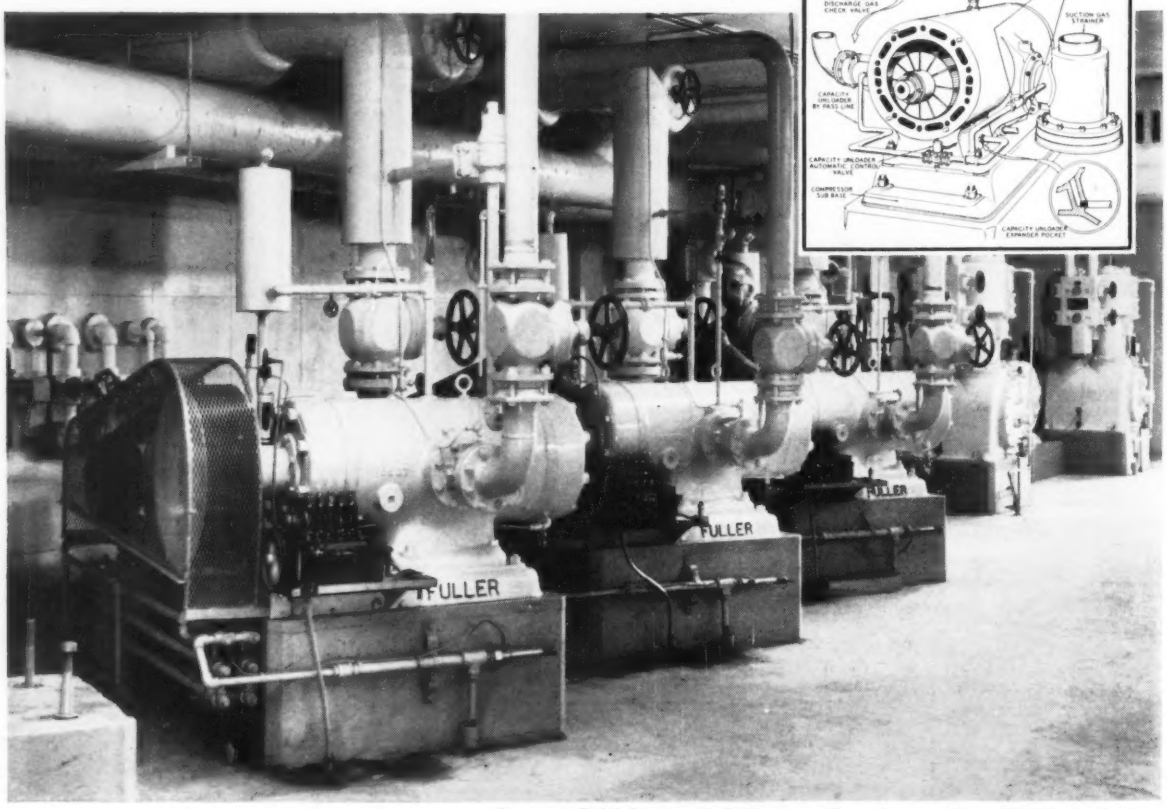

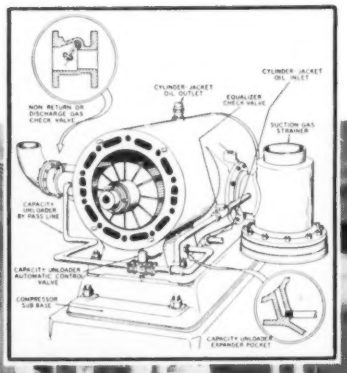

Trenton Cold Storage Ltd. Trenton, Ontario, uses three FES-Fuller Rotary Booster Compressors, rated at 244 tons, to maintain an even temperature of –40°F. *Installed by John Inglis Co., Limited, Toronto, Canada.*

TRENTON DROPS POWER COSTS 20% with New FES-FULLER booster installation!

Here's what Eben James, General Manager of Trenton Cold Storage, Ltd.—one of Canada's largest food freezers—says about their new FES-Fuller-designed refrigeration system:

"Our operating costs for power have dropped 20%, yet we've handled a greater volume this year than before. It has been a great satisfaction both to the operators and myself to see our plant run so smoothly."

And here's how this low-cost, efficient operation is safe-guarded by FES-Fuller Rotary Boosters:

1. **Absence of valves** and other reciprocating machinery permits continuous service for long periods, under heavy loads, without attention. Rotaries maintain full capacity for life of units.

2. **Patented jacket cooling** of FES Fuller Rotaries eliminates possibility of freezing causing damage to compressor.

3. **Vibration-free rotaries** are mounted on simple, low-cost foundations. Installation and maintenance savings are outstanding.

4. **Space-saving rotaries** mean uncluttered, efficient engine rooms. Trenton installation leaves adequate room for expansion despite ceiling height of less than 9 feet.

Freezing Equipment Sales engineers are always available for free consultation on the best ways to add to present freezer capacity, or to design new facilities. Write today for full literature on FES-Fuller Rotary Booster systems.

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LOW TEMPERATURE FREEZING EQUIPMENT

CASE HISTORY OF MONTH

From the files of the National Consumer Panel of Market Research Corp. of America. Material is factually correct. Identities of products and companies are masked to insure anonymity.—The Editors.

Price Deal Pays Off

Management's problem

FOR SIX MONTHS we offered a 4-for-the-price-of-3 deal on our highly competitive product. The offer, restricted to the smaller of our two package sizes, was available in any one region for a 6-8 week period.

Now we want to know whether the net results made this a worthwhile deal that can guide future promotion.

WHAT WOULD YOU DO?

Management's decision

To gage the deal's effects, management dug out answers to these four questions:

1. Who bought the price-deal product—new customers or old?
2. Were any new buyers converted to continued use of the product?
3. Were former users of the larger package size converted to the smaller size unit?
4. Did regular customers "stock up" with deal merchandise?

Result of action

Purchase diaries of members of the National Consumer Panel showed that the deal was bought by an equal number of new and old customers. Significantly, repeat rate among new buyers attracted by the deal was more than 50% as good as the repeat rate among old customers. New buyers who became regular customers as a result of the deal added 7% to product's volume.

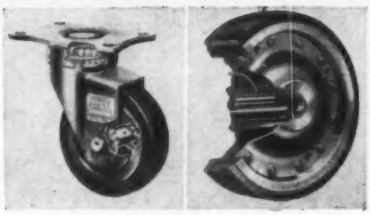
True, there were switches from the larger to the smaller unit. But post-deal checks showed the ratio of large-size users to small-size users returning to pre-deal status. There was no stocking up by former heavy buyers, but rather a replacement of the regular product with deal merchandise.

Among former light buyers, volume rose sizably. This was partly because the deal "forced" purchase of four units, and partly because light buyers bought more frequently during and right after the deal.

Overall, then, the deal was a success. It reached as many non-buyers as buyers. Nearly 40% of the new customers repeated with regular merchandise shortly after the deal. Quantity bought by former infrequent users zoomed. Regular heavy buyers didn't "load up" at the favorable price. It produced some sampling of the small size by users of the large size. And spread was efficient—more than 80% of the buyers made only one deal purchase.

For more information, write to Case-History Editor, FOOD ENGINEERING, 330 West 42nd St., New York City 36. Your inquiry will be directed to the source of the case-history item.

DARNELL
CASTERS AND WHEELS



They're Job-Tailored to give you
— the most for your money —

RUBBER TREADS . . . a wide choice of treads suited to all types of floors, including Darnelloprene oil, water and chemical-resistant treads,

RUST-PROOFED . . . by zinc plating, Darnell Casters give longer, care-free life

LUBRICATION . . . all swivel and wheel bearings are factory packed with a high quality grease that "stands up" under attack by heat and water.

STRING GUARDS . . . Even though string and ravelings may wind around the hub, these string guards insure easy rolling at all times.

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Flavor-Gram

CAPSULED NEWS FROM THE WORLD OF FLAVOR

✓ WHAT MAKES A HOT TAMALE A HOT SELLER? The XLNT Spanish Food Company of Los Angeles attributes the ingredient success of its new cocktail-size beef tamales largely to Ac'cent brand monosodium glutamate.* Taste tests with church groups sold this specialty food company on Ac'cent. When people sampled XLNT's old-style tamale without glutamate, the new tamale with glutamate, and a competitive tamale, a convincing 63% preferred the new tamale with Ac'cent.
*Food Business, Jan. '58

✓ LOW-SALT KOSHER FROZEN FOODS TO ORDER. Patients in 15 large New York hospitals can now order from a low-salt line of Custom Frozen Foods, developed by Lou G. Siegel, New York restaurateur. Although treated with salt in the koshering process, the individual pre-cooked portions are low enough in sodium for salt-restricted diets. In the quick-freezing process, monosodium glutamate, which contains only ⅓ the sodium of salt, is used to enhance, and hold, the foods' natural flavors.

✓ "TYPE A" HOT SCHOOL LUNCHES FROM A FREEZER? It's being done! Chicago Public Schools are now successfully serving some 3,325 pre-packaged frozen entrees a week—and checks of "leftovers" indicate that children really like the food. Standardized recipes are used for uniform quality and cost control. And monosodium glutamate is used to help hold flavor through the freezing and reheating process.

✓ FLAVOR SYMPOSIUM IN PRINT. The broad scope of the November '56 conference on "Chemistry of Natural Food Flavors" is indicated, in part, by the size (200 pages) of the recently published report (May 1957) of conference proceedings. Chapter titles, such as "The Emerging Science of Flavor" and "Technique and Methods for Research in Flavors," and questions asked, such as "What are the flavors in poultry, meat, fruit and vegetables?" further reflect the amount of flavor "ground" covered at the symposium.

✓ THE "FATHER" OF MONOSODIUM GLUTAMATE. Quite by chance, a German chemist first isolated glutamate as a pure substance in 1866. But it took Professor Kikunae Ikeda of Imperial University, Tokyo, to bridge the gap between chemistry and cookery. In 1908, while experimenting with the dried seaweed used for centuries in his country's cuisine, he isolated the glutamate it contained—and became most impressed with its benefits. The result? Today, over 13,000,000 pounds of pure monosodium glutamate are produced in the U.S. alone every year.

✓ FLAVOR IS THE MAIN BUSINESS OF AC'CENT•INTERNATIONAL. New developments and happenings in the Food Processing Industry are just one of the many services we offer you. As the American pioneer of monosodium glutamate, let our experience, our qualified personnel, research and technical facilities help you solve your flavor problems. If you would like to know more about the news items reported here, just drop a line on your letterhead to Technical Service Dept., Ac'cent • International, 20 N. Wacker Drive, Chicago 6, Ill.

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Bigger Bite for Non-Foods?

Repercussions of General Electric's scrapping of "fair trade" on small appliances may extend to the food industry. GE's action, duplicated by several other appliance makers, poses these consequences for food makers:

▶ Makes it easier for more supermarkets to follow Grand Union's "super general store" idea–adding small appliances to non-food sections. GU itself announced plans to open nine supers with extensive non-food space this year.

▶ Stepped-up interest by discount houses in food departments. Several eastern discounters have already taken the step to encourage food traffic to their stores. And Masters, a leading house, disclosed its next outlet will have a 30,000-sq. ft. food market.

Bottlers Raise Sights

Stepped-up merchandising by soft-drink bottlers is aimed at a variety of fronts.

Canada Dry (record '57 volume: 80 million cases) is mounting its biggest spring and summer ad drive in history, and it will standardize on a single package shape for all flavors. Company hopes to make inroads in the 400-million-case volume of flavor-drinks accounted for by little-known brands.

Nehi plans to expand its foothold in the industrial vending and military installation fields with a new bottler incentive program. And Pepsi-Cola has unveiled a new series of "Light Look" vending equipment to match its advertising theme.

Hitch Promotion to Season

Clues to the best time for promoting specific items are contained in the National Canners Assn.'s Philadelphia Project Report No. 3. Covering the seasonal sales pattern of canned foods at 250 Acme units over a 12-month period, the report points up the profitable periods for special promotion and advertising drives.

For example, the annual Spring and Fall campaigns behind cling peaches and fruit cocktail, respectively, are paying off. Sales of peaches peak in March, when they equal 11.9% of annual volume. And fruit cocktail's best month is October, when sales are 12.5% of the annual volume.

Marketing's Grain of Salt

Two popular merchandising generalizations–that 90% of new products fail, and that up to 70% of food store purchases are made on impulse–are now coming in for qualifications.

Fatality rate of new products among well-managed companies is probably closer to 40% or 50%, argues Conrad Jones, of Booz, Allen & Hamilton, management consultant firm in Chicago. He says the smart company, benefiting from skilled research and preliminary tests, often retires new products even before they reach the commercial-introduction stage.

Findings of *McCall's* second food and grocery products purchase diary study show that 4% of housewives rely only on shopping lists, 5.6% on impulse exclusively. However, 62.3% use both methods *but placed more emphasis on shopping lists.* And another 27.5% who employed the two systems favored making more in-store decisions.

Moral: Keep a beady eye on all marketing "truths."

Shorter New Product Tests

Consumer sampling offers manufacturers a quick fix on public reaction to new products. So Harry D. Wolfe, marketing professor at Columbia U., told American Marketing Assn.'s N. Y. chapter last month.

First step in such a check, he explains, is to set up a sample of 300 to 500 homes. After advertising has been started, you interview the sample to see what percentage bought the product.

Sample can also be used to find rate of repurchase, which spells difference between success and failure. Dividing the number of people who said they liked your product by the number who tried it will indicate the repurchase rate.

Interviews will also show what kind of people prefer your product and the public's opinion on the item's weak and strong points.

BRIEFS

Do your salesmen overlook the food page of their daily paper? Meat packer Wilson has field men clip out easy-to-make menus, asks retailers to build promotions around them. Newspapers gladly give extra food-page copies for use as window posters.

Beer 'n platters will replace proverbial beer 'n skittles, if Anheuser-Busch and Columbia Records have their way. New "Midnight Serenade" album, whose cover shows girl listening to phonograph and enjoying glass of beer, is being plugged in brewer's advertising, while disk maker's promotion includes mention of Budweiser beer.

Whitman's is out to lick traditional Summer decline in candy sales. Company will bring out new packages of foil-wrapped sweets (to extend shelf-life) and back them with a "Fresh Chocolates for Summer" drive.

Familiar landmarks make strong trademarks. So finds Schafer Bakeries. Outside replica of a wood-burning range, built by now defunct stove maker, was slated for destruction–until Baker Jack Schafer bought it, made a neon-lighted display out of it, and relabeled his bread "Kitchen Stove." Located in busy Detroit intersection, sign is passed by thousands of people daily.

BRILLIANT color reproduction of Marathon's new board enables Dressel's to capitalize on faithful illustrations of baked goods on front and back panels of retail packages. Smooth surface also enables sharpest printing effects.

NESTING FEATURE of new square aluminum cans allows easy stacking. Edges are rounded for added strength and handling ease. Can in background has slip-on lid, which Reynolds is working on for candy and cookies.

Latest Container Materials

Built-in sales values, lower costs stressed at Chicago show. Stronger 'pick-me-up' look, added consumer conveniences mark packages. New machines boost automatic output

MINDFUL of packaging's expanding role in building profits, suppliers are intensifying their efforts to develop top-flight containers that do a better selling job, also line machinery that cuts costs.

Among the latest strides, made known at last month's convention of the National Assn. of Frozen Food Packers in Chicago, were (1) A new paperboard by Marathon that brings new color dimensions to printed cartons, (2) an easy-open, non-overwrap, tear-strip waxed carton by Container Corp. of America that offers greater convenience values, (3) several foil and aluminum packages by Reynolds Metals that extend the use of these materials to a wider range of food products, and (4) boil-in-the-bag pouches by Shellmar-Betner.

Marathon's "Hi-Fi" board results from a new production process that conditions board fibers to an ultra-smoothness. To take full advantage of the board's bump-free surface, Marathon developed new printing plates, special inks, presswork, and coating-application methods—all tailored to the paperstock's special requirements.

Because of the board's fine grain, a special perfection in delicate color tones and sharp printing is now achieved. Furthermore, the extra-smooth surface makes the board ideal for laminating sheet materials, foil, or film. And there's this final bonus: Price is the same as that of the company's Q-board.

Among the first products being sold in cartons made from the board are Dressel's baked goods, Swift's shortening, Rath's bacon, and Land O' Lakes butter. And Birds Eye is testing the board as a container for new frozen dinners it will bring out soon.

Housewife Gets Help

Development work on CCA's tear-strip carton began 6 months ago when Paul Jacobs, merchandising manager of Gorton's of Gloucester, sought a unique package that would set his frozen fish sticks apart from competitive brands. CCA's twofold solution is a printed waxed carton that eliminates overwrap, and a packaging machine (Concora Sealer) that binds carton flaps with cold glue at 100/min.

Because glued-flap packages are not easy to open, CCA developed an easy-open tear-strip that has a pull-tab. Top line of the tear is offset from the inside tear by $\frac{1}{8}$ in. Since there's no break in the die-cut, carton gives the product the necessary protection.

Jacobs thinks the tear-strip package, the first non-overwrap one used for fish sticks, will prove popular for frozen pies and other products. He also expects the carton to increase Gorton's current 15.5% share of the fish stick market by 5% this year.

Primary advantages of the carton: Merchandising message is printed on six display sides, and packaging costs are lower because there's no overwrap. Secondary benefits: Consumer gets quick, easy access to the product, does not have to worry about lost cooking instructions when overwrap is torn off.

Among the new packages introduced by Reynolds last month are—

1. Square, seamless aluminum cans that permit direct heating of frozen foods and other products. Cans have conventional double-seam hermetic closures. Meanwhile, slip-on lids are in the works for candies, cookies, and specialty items.

CONSUMER CONVENIENCE is stressed in new zip-it-open tear-strip container used for Gorton's fish sticks. Just a pull of tab and the sticks are ready at hand. Box's special die-cut construction protects product against moisture, yet gives housewife quick access to product.

and Closing Units

2. Semi-rigid foil containers laminated with wax on the inside. Borden's is test-marketing them for cottage cheese. Package is said to give the product longer shelf-life than popular waxed buckets.

3. Foil pouches, which Birds Eye is testing in Cincinnati and St. Louis for its "fillet regale" item. Package consist of two foil bags, each sealed on all four sides. Individual unit holds a single fillet. It has a perforated panel, which consumer peels off, thus converting pouch into a pan in which to broil or bake the fish.

Stepped up use of boil-in-the-bag pounches is reported by Shellmar-Betner. New bags, made of stronger and cheaper polyethylenes bonded to Mylar, are hailed by processors. A further addition of foil to this laminate has been found to extend the protection.

Next big development with the bags will be packing of frozen vegetables, such as whipped potatoes, cooked squash, and creamed spinach. Seabrook Farms and Stouffer's are now experimenting in this specific direction. Vegetables must have enough moisture content so they can cook in their own "juice".

PACKAGING

Machinery that cuts costs and improves line efficiency is also coming in for its share of attention from suppliers.

One forming and closing unit (Chicago Carton) handles from 30 to 100 boxes/min. Equipment can be synchronized with standard filling and overwrapping machines. Cartons made available by the company are leak-proof, have web corners for double-wall strength, and feature glueless locking.

Needham Mfg. brought out a new stacker for use with its patty former. Unit neatly piles formed patties at the rate of 40 to 80/min. Company is now working on an extension of the machine, which will allow automatic cartoning of the patties.

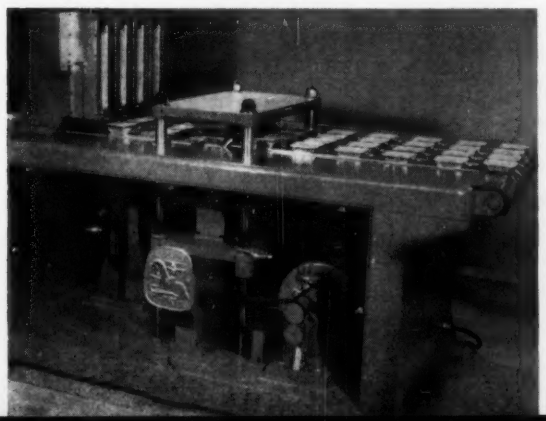
Two machines which, respectively, automatically dispense and close 40 and 200 aluminum foil containers a minute, were unveiled by Reynolds.

The higher speed unit is available in one-, two-, three- or four-line arrangements. Designed to handle the company's 5 x 5 in. Cass-Rol Pak container, the machine can be converted to take any size round or rectangular container currently offered or under development.

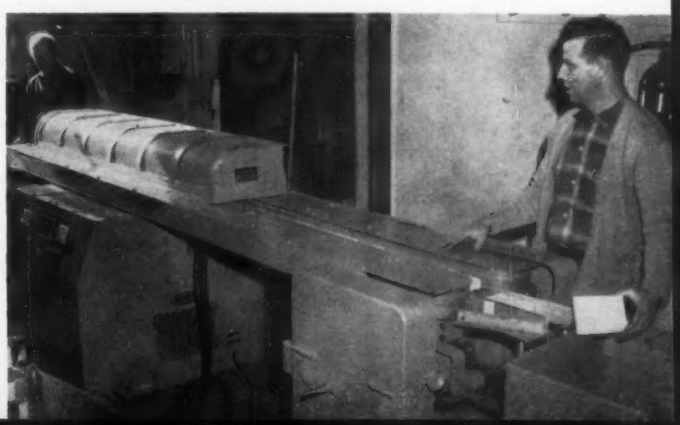
The smaller single-line machine can be expanded to a two-line operation with an 80 containers/min. capacity. Closed containers are removed from the die automatically.

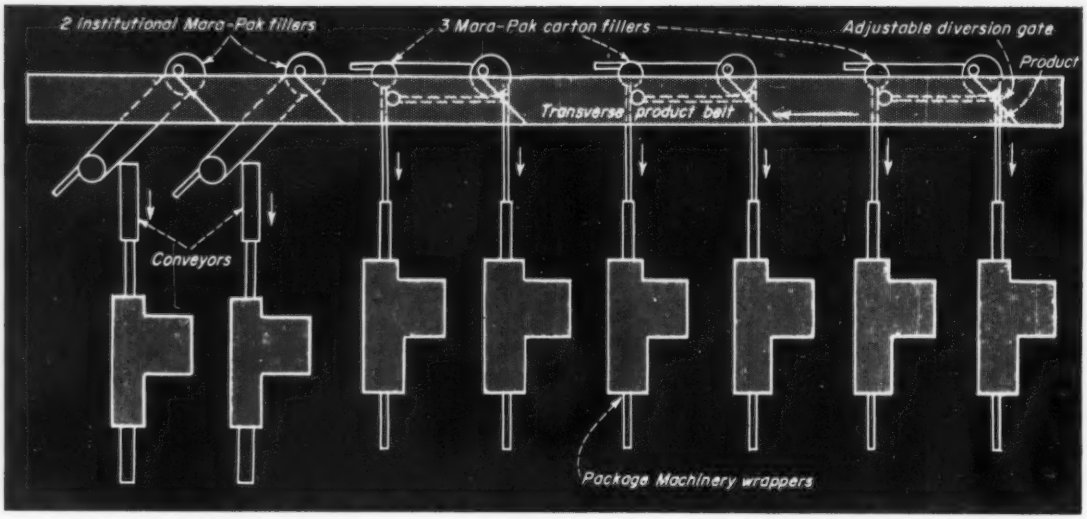
—End

FASTER CLOSING of foil containers is made possible by new Reynolds Metals high-speed 4-line model that handles 200 units/min. "No container-no lid" arrangement prevents discharge of covers when there is a break in normal flow of packages. Unit is notably compact.



SEALER developed for Gorton's by CCA uses new cold glue process to weld end flaps of tear-strip carton. Filled packages move from filling line to sealer, where electrolytic unit welds glue and waxed polyethylene into solid bond. This is an action shot of the test model.





This Flexible Unit Layout Licks Line Down-Time

Varied patterns of both flow and machine operation are possible with this Ventura arrangement. According to setting of adjustable diversion gates, product is swept off transverse belt to serve individual fillers. Different machines or combinations of them, may be run as required.

How to Make Your Packaging

Trick is to curb shut-downs through: ● Astute design . . . ● Fool-proof

A LOFTY COST is run up in the food-packaging operation. This is largely—but not entirely—because of the inherent characteristics of containers and products.

Presently, this high fixed cost is unavoidable. Nothing much can be done to alter product configuration and fragility. And carton shape and size, also wrapper, are relatively standardized. Further, mechanical perfection of filling and wrapping machines is high.

But you certainly can do something to make this operation more efficient—in short, reduce down-time of the filling and wrapping machines.

Down-time is the bugaboo that piles on the additional costs. It takes a big ugly bite out of potential profits. How minimize that bite?

A three-shot attack has done it at Ventura Farms Frozen Foods, Inc., Oxnard, Calif. To brief it, this enterprising concern has (A) designed special flexibility into its product-conveyor system, (B) drafted a specific, sure-fire preventive maintenance program for its filling and wrapping machines and (C) developed special machine devices for greater efficiency.

DONALD MEAD

Maintenance Superintendent, Ventura Farms Frozen Foods, Inc., Oxnard, Calif.

The Sharp Accent. . .

. . . on flexibility is quickly evidenced in the feed-conveyor system that handles full production of lima beans from process. The series of five in-line fillers is arranged with small-volume units (retail-size cartons) at the head of the conveyor and large-volume units (institutional containers) at the terminus. This clinches three major advantages:

1. Down and out—but no upset. When minor repairs or adjustments are needed on fillers or wrappers, or when a paper change must be made, a unit may readily be shut down—taken off the line. Product-diversion arms are simply adjusted to "half-speed" the product flow from the feed conveyor so as to supply only one filling-wrapping station.

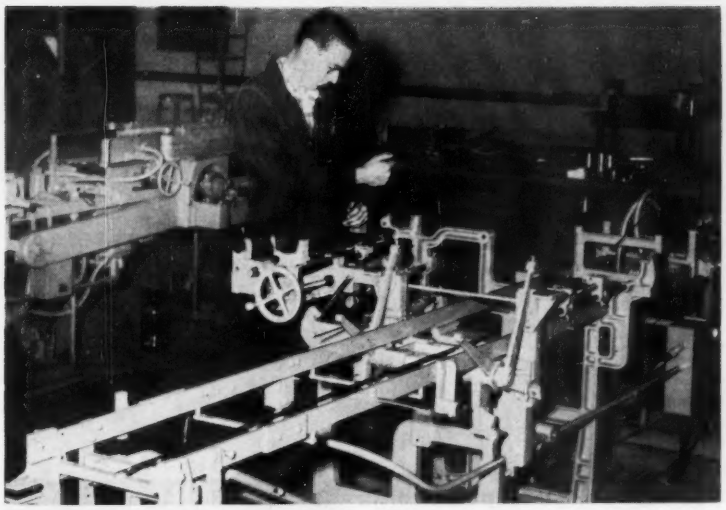
Remaining product is conveyed on to the institutional units at the end of the line. The latter two large-volume stations will easily handle 60% of total flow.

2. Sorting-line keeps going. Since there's thus no need to reduce flow from process, sorting doesn't have to be curtailed. A big saving! For this is manual grading—representing one of the highest single direct-labor costs in the frozen food plant.

3. Ample time for fixing. Unless several units have to be shut-down at once (which would be unusual), mechanics have plenty of time to make careful repairs to machines. There's no pressure on them due to over-flowing product conveyors.

"No Other Way"

The preventive maintenance program assures that each machine is



CARE of machines demands permanent-payroll mechanics of top skill, says Author Mead. "The 'temporaries' haven't got it. The 'fairly goods' fall short. And even the so-called 'A-1s' sometimes don't master the complicated timing." Here, Ventura Mechanic Bill Palmer meticuously reassembles a wrapper.

Line Really Click

maintenance . . . • Special machine innovations

dismantled annually to determine wear on operating parts. There is no other way to check inner-works (shafts, bearings, gears, etc.) of these complex machines.

So each year, following the packing season, fillers and wrappers are knocked-down. Every part is carefully examined, cleaned (Standard #350 Thinner) and, based on the mechanic's experienced and expert judgement, worn or defective parts are replaced or repaired.

This is the crux—because the very essence of successful machine maintenance is proper parts replacement and accurate reassembly of the machine.

Yet this is the point where some companies balk—because of costs.

But granting that new parts are expensive, they're not exhorbitantly so when you figure that they assure proper, constant machine operation, and save labor. To achieve a successful overhaul, worn or damaged parts must be replaced—otherwise delicate adjustments that depend on close tolerances cannot be made, and the machines won't operate with proper efficiency.

Further, an emergency supply of spare parts is mandatory. Which parts and how many of each? That's something to be determined by experience. Our plant has "analyzed" it down to a limited inventory. As one spare part is removed from stock, it is immediately reordered.

Having parts on hand is very cheap insurance for efficient packaging.

Next step is to clean and paint the component parts before reassembly. Such painting results in two definite benefits: First, of course, is the essential protection from corrosion (we use Rust-Oleum paint). Second is the psychological effect that a clean, well-kept machine has on employees. Operators are much more inclined to keep these well-painted machines clean. This, alone, pays dividends—because cleanliness is a prime factor in their efficient operation.

After reassembly comes that highly important step—testing the machine. Initially, there are the preliminary adjustments. Then the testing is done under conditions simulating actual machine operation. Since our overhauling is done prior to the processing season, we run dry beans in these trials.

Like any other machine break-in period, the test run is slow at first (60 cartons/min., with speed being gradually increased to 110/min. (our top speed). Actual time periods as well as production rates are matched. Hundreds of packages are filled and wrapped, at high speeds, while the mechanic "sweats-out" the final machine adjustments.

The use of hundreds of cartons and wrappers may appear, at first, to be an unnecessary expense. But, consider that it takes less than 1 min. for the fillers to run off 200 package (one filler serves two carton wrapping machines) and but 1 min. for the machine to wrap them! The pay-off of this seemingly expensive trial comes when, under actual processing conditions, the machines operate with "Swiss watch" action under sustained conditions.

This brings up the subject of equipment abuse. These machines are precision pieces and must be treated as such. A filler or wrapper can't be expected to continue to perform properly if it is constantly operated at top-speed. A sensible, constant speed will handle more production in the long run and do a high-quality job with a minimum of waste and downtime.

Manpower When Needed

According to Ventura experience, trained packaging mechanics must be on the permanent payroll. To train such men each season means, essentially, that you never have experienced men on these key jobs. The men usually available for temporary employment just aren't capable of grasping the operation of these complex machines. Also, they rarely, if ever, acquire the staff man's strong responsibility to keep the machines continuously operating in top form.

It isn't simple to fill these important staff jobs. Some "fairly good" mechanics later prove to have individual limitations that make them incapable of handling this specific kind of job. There's also the "A-1" mechanic who's not suited for it because he is unable to master the complicated mechanical timing and its relationship to the other phases.

Then there is the man who can

only tear-down and reassemble a unit. His mechanical ability is limited to simple machine overhaul. He can't be trusted with keeping the unit in operating condition—just doesn't have the savvy.

On the credit side of the ledger, the well-trained, experienced packaging-machine mechanic offsets a large percentage of the cost of a preventive maintenance program in production savings as well as in lengthening machine life. His ability to do the right thing at the right time, under the pressure of actual operating demands, keeps things clicking.

At Ventura Farms, the same six mechanics who overhaul these machines also supervise their proper operation during the packing season—as trouble-shooters (not machine tenders). There are three of these men available each shift to keep the machines in tip-top condition. They handle paper changes, one brand to another, and are the only employees authorized to make machine repairs or adjustments.

Machine tenders, in contrast, are responsible for their equipment's cleanliness and lubrication, and the conventional fitting of new paper rolls—all under the watchful eye of the mechanics. Machines are lubricated (#707 Lubriplate) at the end of each shift.

4 Special Machine "Twists"

Other surprisingly valuable benefits have developed from our preventive maintenance program.

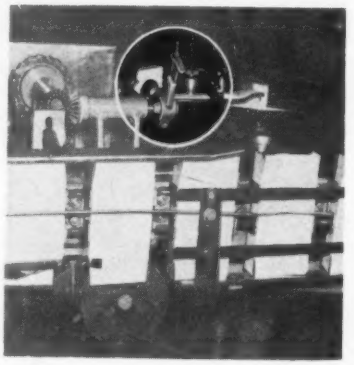
It's well known that mechanical responsibility often develops a man's creative ability. Calling it "gadgeteering" has a deprecatory sound. In actual truth the gadgeteer frequently comes up with mechanical adaptations and innovations of singular value.

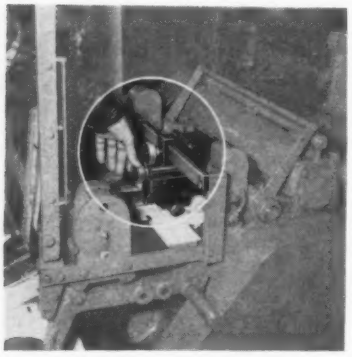
At Ventura Farms, we've developed a number of these "twists" in such a way as to make our packing operations much more efficient. Here are four of the most interesting—

Solves Carton-Flap Trouble

Problem: A means was needed to insure that all cartons arriving at filling spout have their inside-top flaps folded outward. For occasionally these flaps would still be folded inward—blocking the filling aperture and causing no-fill or under-filled cartons.

Answer was the rotating carton-flap arm, circled in photo (guard removed). Powered by shaft on filler, this arm contacts any in-turned flap and positions it under a rod, which holds it back until carton is filled. This has made for sure performance.

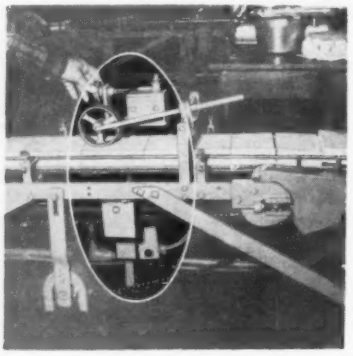




Non-Stop Wrapper Registry

Problem: To make any required corrections of registration of wrappers being applied on cartons—without needing to shut down the machine.

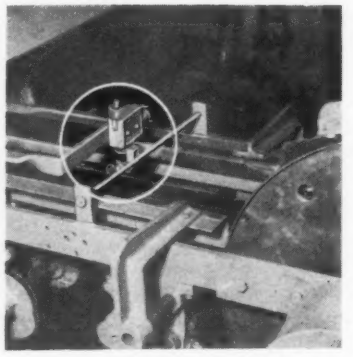
Answer was our development of this adjustable electric-eye registration scanning head. The knurled wheel being turned in the photo permits moving of the head with, or against, the paper flow, in horizontal plane. And the second knurled wheel moves the head for lateral adjustments. These controls are integrated with the unit's electro-mechanical positioning system to bring precise registration of wrappers. It's won savings in paper and time.



Assures Constant Output

Problem: To achieve constant output through maximum regularity in feed of cartons. Specific aim was to curb intermittent operations of wrappers, also save wear and tear on equipment. Needed was proper carton feed coupled with required double prime-load for the wrapper's carton-indexing wheel.

Answer was this adjustable-switch mechanism attached to feed-in conveyor. Now, flow of cartons to wrapper in desired number, as predetermined, is assured. Turning of knurled wheel initiates electro-mechanical action to increase or decrease rate of carton flow.



Cures Carton Jam-Ups

Problem: To curb machine jam-ups due to "doubles" (two cartons coming at once) or carton misalignment. Such jams interrupt smooth production and waste time in clear-up work, also may damage machine.

Answer was this electro-mechanical control positioned at feed end of wrapper. It stops entrance of doubles (no jamming of elevator). With unit in action, any cartons that are awry contact a cam. This actuates a switch, and thus both filler and wrapper are shut-off. Flow is directly corrected and operations resumed before trouble reaches machines.

an economy decanter for liquid foods

by BROCKWAY

Why pay a premium for a decanter? Here is a graceful looking, *re-usable* quart decanter that costs no more than an ordinary quart container—even less in many cases.

It is ideal for all juices—tomato, orange, grape, apple, prune, pineapple, etc. . . . and of course vinegar or cider. Actually, it is perfect for anything that flows—liquid or semi-liquid.

Stippled shoulder area provides excellent hand grip when decanter is in use . . . also reduces visibility of any possible neck separation of product at the point of sale.

Your Brockway salesman will be pleased to provide samples and complete information on the Economy Decanter. Or, if you prefer, call or write direct to the Foods Division, Brockway Glass Company, Brockway, Pennsylvania.

SYMBOL OF QUALITY · GLASS CONTAINERS ·

BROCKWAY GLASS COMPANY, INC.

BROCKWAY, PENNSYLVANIA

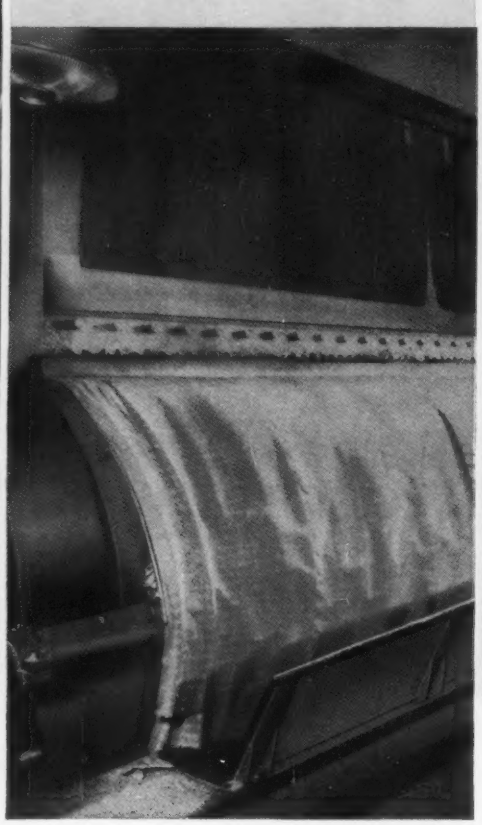
Sales Offices in Principal Cities

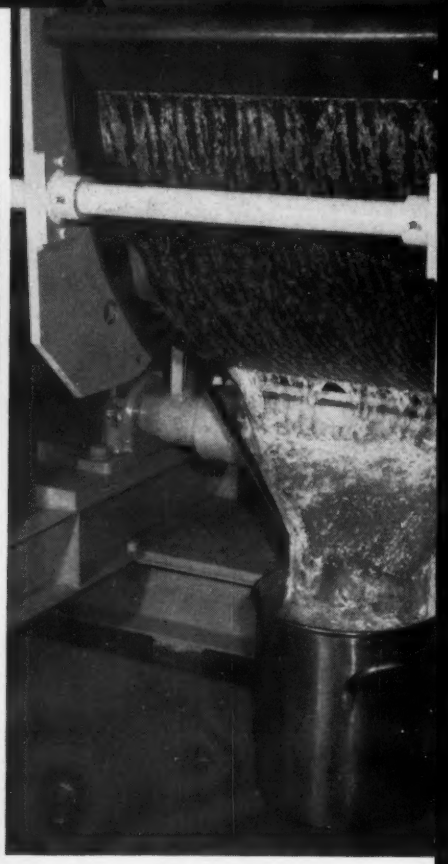
Subsidiary: **Demuth Glass Works, Inc., Parkersburg, W. Va.** *Plants:* **Brockway, Pa. • Crenshaw, Pa. • Freehold, N.J. • Lapel, Ind. • Muskogee, Okla.**

For more data, circle this page number on card at back →

Molten materials, often repelled by smooth drum surfaces, are successfully handled on grooved drums.

Pastes and sludges of varying viscosities are handled rapidly and economically by continuous drum drying.





Heavy or dilute liquids respond well when dried on equipment specifically designed for the process.

How Buflovak Drum Dryers are tailored to improve your product . . . boost your profits

Whether you need a single drum dryer to handle simple solutions at low cost . . . an enclosed drum dryer to process toxic materials . . . a double drum vacuum dryer to protect heat-sensitive liquids, Buflovak builds the dryer to best meet your needs.

Five different types of drum dryers are just part of a complete line that includes atmospheric and vacuum types, with chamber, pan, rotary, spray and other models.

Backed by this complete line, Buflovak experienced engineers can *impartially* recommend the unit that meets known specifications . . . fulfills the requirements of individual product testing.

Select your dryer scientifically at the Buflovak Customer Service Laboratory

An extensive line of small scale and pilot-size equipment is at your service for investigating drying, evaporation, extraction, impregnation and crystallization problems. Here you obtain accurate data and actual samples of your processed product, examine operation efficiency . . . thoroughly explore by-product possibilities.

Catalog 380 describes the Buflovak Dryer line; Catalog 381 fully describes Buflovak's lab. Both are available at your request. Additional facts also available in C. E. Catalog, pages 429 to 452.

BLAW-KNOX

BLAW-KNOX COMPANY
Buflovak Equipment Division
1631 Fillmore Avenue, Buffalo 11, New York

8 Food Cartons Hailed as Tops

They sweep first prize, seven merit awards in General Merchandising Superiority category at Folding Paper Box Assn.'s annual carton competition

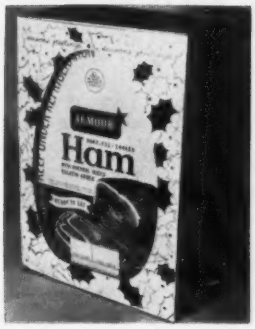
FIRST AWARD

FIRST AWARD went to Duncan Hines family of 14 cake mix cartons. Judges particularly noted package's marketing effectiveness and use of imagery, color and total display impact.—*Lord Baltimore Press, Baltimore.*

These attractive boxes scored merit awards

STAPLE in bright, dynamic dress took merchandising prize for Savannah Sugar Refining Co. New dress is for 3 sugar types.—*Chicago Carton Co., Chicago.*

COLORFUL carton (red and blue) helps attract buyers to this McCormick & Co. new product.—*Lord Baltimore Press of Calif., San Francisco.*



NOVEL use for carton is this Armour and Company unit displaying canned ham for impulse sales, gift presentations. — *Waldorf Paper Products Co., St. Paul, Minn.*

FLIP-TOP tea carton of Stewarts Coffee Co. took honors for merchandising superiority, potential volume use.—*Ace Folding Box Corp., Middlebury, Ind.*

APPETITE APPEAL is primary feature of this John Morrell & Co. product. Identification of product and brand also helped this winner. — *Waldorf Paper Products Co.*

CLIMBING SALES marked success of this upgraded carton for Standard Brands, Inc. Lithography in six colors adds strong visual appeal for consumers.—*Milprint Inc., Milwaukee.*

CLEAN DESIGN plus special board finish netted prize for Campbell Soup Co. piece. Ease of filling was another advantage. — *Lord Baltimore Press of Calif., San Francisco.*

TOP SPARKLE marks new clear-cut, modern package lids. Predominant is sharper "Sara Lee" logo for strong brand identity. It's set, along with "rich-butter" yellow product name, in sophisticated cerise background. Note appetizing 4-color photos, also consistent disk-and-ribbon device giving new eyecatch to "Needs No Baking, Ready to Serve." Further,

This All-Out Attack Assured

To evolve its striking new package covers, Sara Lee went way beyond the usual company-agency-designer orbit—got two different creators busy, called in an expert on motivation, worked with an authority on color

ARE YOU PLANNING to redesign your pacakages?

Then give a sharp look to the 'no-stone-unturned tactics adopted by the very successful Kitchens of Sara Lee, bakers of gourmet-type cakes.

Theirs is a multi-step approach wherein top management calls in several package designers, the advertising agency, experts in motivation, authorities on color, and printers to carefully weigh all angles.

Specifically in point is Sara Lee's development of new package-cover lids for its five quality products baked and sold in aluminum containers.

But why, you ask, should new package designs be sought by Sara Lee? It's literally skyrocketed its cake sales—from a $400,000 volume in '51 to $13,000,000 in '57. And can you question any packaging that's figured in that kind of a rise?"

Answers President Charles Lubin: "As pioneer of rigid aluminum containers for baking, merchandising, and serving baked goods, we've always strived to improve overall design of packages to reflect the high quality of our products. We've always maintained the 'let's-not-be-content' attitude. Just as we constantly work for better baked-goods quality, we also constantly seek new packaging to create a greater atmosphere of that quality."

Further angles are pin-pointed by M. Kaplan, v.-p. in charge of sales:

"Real key to advertising and merchandising is the package. Studies indicate 90% of buying is on impulse. For this reason, we call on packaging to provide better in-store recognition—distinguishing our products' exceptional qualities.

"We renewed emphasis on redesigning our packages over a year ago, when we began experimenting with all-butter chocolate brownies. As our latest product, they would require a new package. So why not, we thought, do a *thorough* job—redesign the packages for the entire family of items?

"Overall package design was important to achieve five-item family recognition. And it had to be integrated, for this identification, into the package design for each product."

Creating The Package

Checkmarking the Changes

Here are the significant changes, revisions, and new effects—

√ **Photos and window.** Four products—cheese, pound, and chocolate cakes, also the brownies—were *more faithfully reproduced* on covers for *greater appetite appeal* in a switch from art to 4-color carbro-photography.

However, no photo was used with the fifth product, coffee cake. Instead, this item's distinctive frosting (a most forceful impulse-buying aid) is revealed by a part-circle "see-through window" on the package lid (printed by Lord Baltimore Press and Wolverine Carton Co.).

√ **Distinguished shade of cerise** gives new covers more sophistication, in contrast to former "homey" appearance. Old red and white logotype

coffee cake's split-type window adds impact. And rectangular packages now read vertically, improving cabinet-selling performance.

Best Design

and colonial-girl hallmark are now gone.

√**The "Rich-butter" yellow product names** more strongly associate and identify use of costly 93-score butter in these baked goods.

√**Clearer less "busy" Sara Lee name** reads with more impact. Research showed company name tied tighter with products, hence its new strength and predominance. Studies revealed that old colonial-girl hallmark had not won sufficient brand identification, so it was eliminated.

√**Convenience newly emphasized.** Phrases "Needs No Baking, Ready to Serve" are effectively displayed on a blue-ribbon background related to an eye-catching spot disk.

√**"Vertical-design" rectangular covers** are employed for three products —brownies, pound cake, and smallller cheese cake (11 oz.). These covers read from top to bottom, whereas former "horizontal" type read from left to right. The conversion provides maximum package exposure to customer and, at same time, conserves display space for retailer.

√**Unusual blend of colors** makes packages stand out stronger at point of sales display. Yet design is such that attractive colors do not take away from impact of colored photos. Solid cerise is ingeniously modified with white background and stars, achieving desired tone.

Reproduction of the cerise on the paperboard is so striking here that dominant recognition among mass-displayed products is assured. The hue is rich and delicate. In short, the undesirable "cosmetic-like" pink-rose shade has been avoided.

√**Foiling and lacquering.** A backing of aluminum foil is given the covers, providing a most effective moisture barrier and hence better product protection. A high-gloss coating of lacquer also serves as a guard, while improving appearance.

√**Top-performance window** is incorporated in the coffee cake cover—giving resistance to fats, brilliant appearance, non-fogging properties, impermeability, and strength. This window is made of Mylar and polymer-coated cellophane (K-203).

√**Sure-register machine coding** is achieved by notching of the lids for hopper feed to crimping machine. Thus coding always goes precisely in the same spot.

√**An improved shipping case** has finalized the program. The new unit (Stone Container Corp.) is rectangular shape to facilitate pallet handling. New shape is also stated to give better protection to packaged products than did former square case. Complete instructions for proper care and handling are printed on four sides, and package lids are reproduced on two sides. Overall, there's better product identification.

9 Steps Did It

Harking back to the specific redesign approach taken by Sara Lee, how did so many experts come to be called in on this project?

Initially, a Sara Lee executive group got busy. This team included top members of these departments: Sales, advertising, merchandising, production and engineering. Also sitting in was Ivan Hill, of the firm's advertising agency, Cunningham & Walsh.

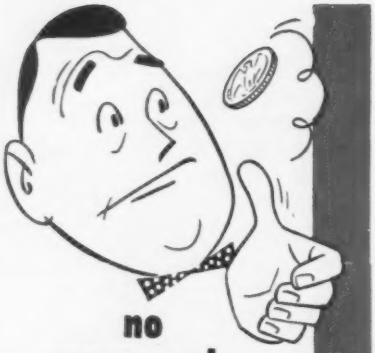
All these people had pertinent package ideas relative to motifs, trade marks, colors, design treatments, etc. But the company didn't want to be "premature"—didn't want to rush things too hastily. So for "insurance," outside design talent was sought out.

Step-wise, here's what took place in the all-angle attack:

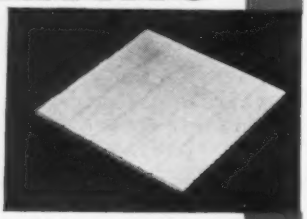
1. The company gave the nod to a top-notch outside package designer —without any strings in the way of

Winner: At press time came word that Sara Lee has received the Award of Excellence in the cake-package division of the Bakery Packaging Council's recent topflight competition.

NOW GONE are fragile "Sara Lee" and overly "homey" look of "too busy" elements which—as seen below—slowed impact of old covers. Out, too, are less-effective red-and-white color scheme and art-type pictures. Also written off is colonial girl hallmark (seen in name logo). She didn't build sufficient recognition.



no guesswork with VICTOR BELTING



Who says *this* belting is *right* for handling your food products? We do . . . on the strength of operating tests conducted by our research department. Customers say so too, because of proven performance. Careful, continual checks of materials assure top workmanship and quality for extra-long life. Performance tests, with your products in mind, guarantee easy cleaning, no residual contamination, and no "belt-taste." That's why—with complete confidence—we recommend for *your* food handling:

VICTOR SUPRENE . . special-woven cotton duck belting thoroughly impregnated with an exclusive Neoprene compound. Water-proof, highly resistant to grease and most food chemicals, smooth-surfaced, and easily cleaned.

VICTOR 475 . . highest quality solid-woven cotton belting impregnated and coated with a special Neoprene compound. Developed for use where laboratory cleanliness is a must. Washable with hot water or steam. Resists rancidity and deterioration.

For food handling the modern sanitary way select from—

A COMPLETE LINE Including:

• Neoprene Belting • Balata Belting • Solid-Woven Belting — untreated, impregnated, coated — many widths and plies • Canvas Stitched Belting • Belting Specialties

3279

Victor Balata & Textile Belting Co.

52 Park Place, N. Y. 7
300-6 W. Hubbard St., Chicago 10

MANAGEMENT PACKAGING TEAM of Sara Lee snaps first-run production samples onto a handy table for a meticulous last-minute check. Eagle-eyeing new covers are (left to right): Ken Harris, advertising manager; Robert Moldafsky, merchandising manager; President Charles Lubin; and Mandall Kaplan, sales v.-p. Camera didn't catch fifth team member—Jack Kollman, production and engineering v.-p.

instructions. And he submitted a variety of original cover changes likely to do a better job.

2. Working through its advertising agency, the company then consulted still another package designer, who also came up with some good ideas.

Going to this second designer set a new pattern. For conventional practice is to get one designer to work up a new package, generally on the basis of your ideas. He creates a package, which is then put on the market.

But Sara Lee felt this wasn't thorough enough. It decided to go further—for it would be very costly if the wrong package resulted.

3. Package-change ideas from both designers were good. But considering the enormous importance it placed on the project, the company still held the door open. Thus, the matter was weighed in several more sessions. Then Ernest Dichter, of the Institute for Motivational Research, was called in. He came up with a voluminous, comprehensive report made up of interviews reflecting consumer reaction to the new packaging ideas.

These findings served to crystallize the ideas of the company's executive team—for example, its thinking on the colonial-girl hallmark. This "hostess" imprint had no impact on the customer. What's more, it was not truly performing as a hallmark.

4. The motivation report provided many other stimulating ideas. So at this stage, the first designer was again consulted, since his work was closest to what was sought. Told of the new thinking, and acting on it, he submitted another set of designs.

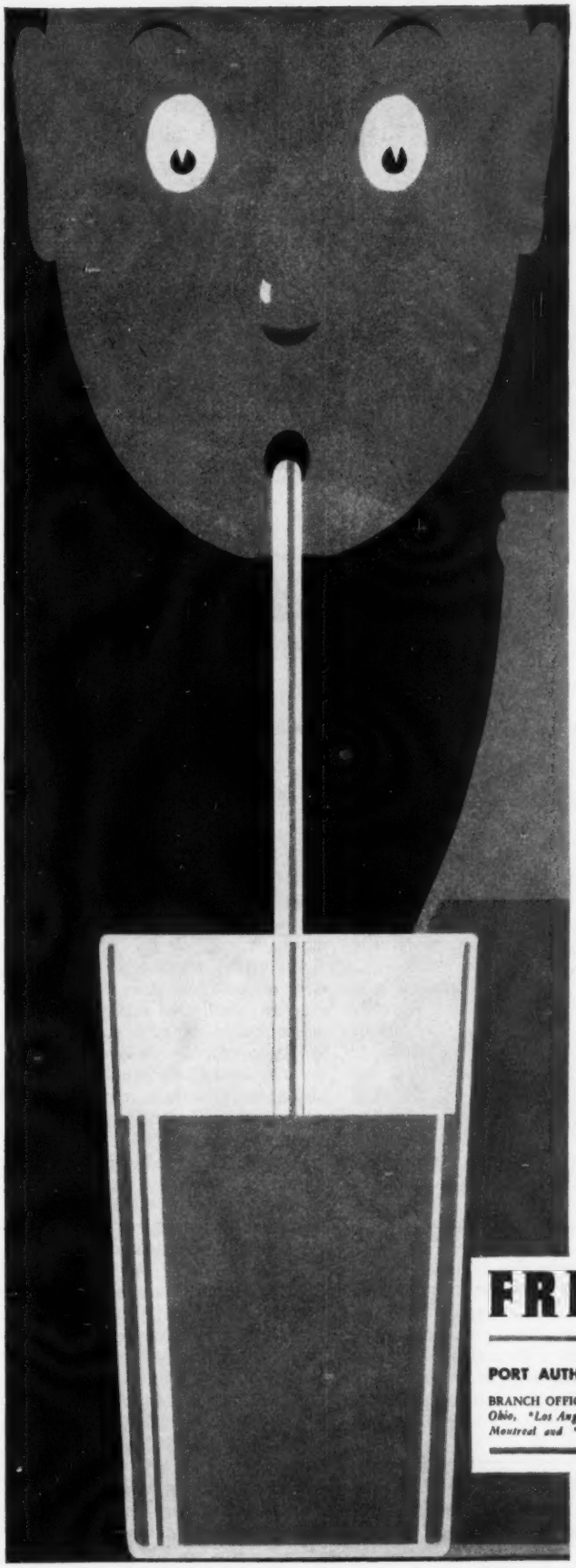
5. But Sara Lee still believed there could be improvements. And here, the ad agency came up with another suggestion—contact Louis Cheskin, of Color Research, Inc., for expert information on color selection. Thus new sound, logical thinking was directed to the question of color, with special ocular and other tests run off.

6. For a third time, the designer was approached. Then, the final work was produced—simpler, more appetite-appealing, and better for in-store display.

7. Last stage ocular testing followed.

8. Then as first proofs were slated to be run off at the printer's—Lord Baltimore Press—all those on the package-development team journeyed to Baltimore to make any last minute corrections on the final run.

9. Before the final package was introduced to the market, it was presented to sales personnel, distributors, brokers, and chain-store customers. Reception was enthusiastic. All testified that a better designed package had been achieved.—*End*



NOTHING SELLS LIKE FLAVOR!

Soft drinks, confections,
foods, meat preparations
and desserts...
their appeal is one
and the same – *GOOD TASTE.*
With your product's success
resting so heavily
upon this major appeal,
how can you afford to use
any flavor but *the best?*
Buyers of long experience
make sure they get the best:
They rely upon...they specify...
FRITZSCHE...
A FIRST NAME IN FLAVORS
SINCE 1871.

FRITZSCHE *Established* 1871
Brothers, Inc.

PORT AUTHORITY BUILDING, 76 NINTH AVENUE, NEW YORK 11, N. Y.

BRANCH OFFICES *and* *STOCKS: *Atlanta, Georgia, Boston, Massachusetts, *Chicago, Illinois, Cincinnati, Ohio, *Los Angeles, California, Philadelphia, Pennsylvania, San Francisco, California, St. Louis, Missouri, Montreal and *Toronto, Canada and *Mexico, D. F.* FACTORY: *Clifton, N. J.*

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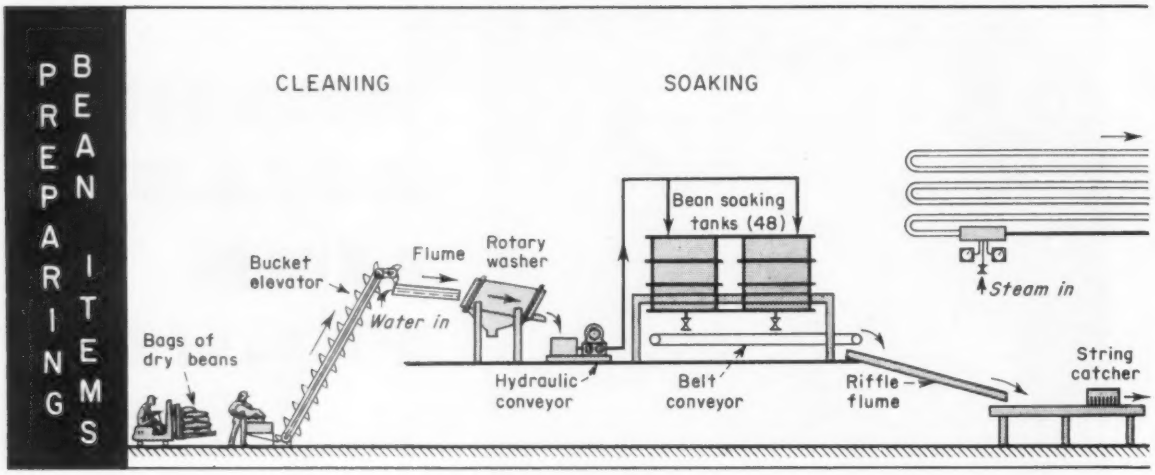


Sharper Scheduling and Handling

Enterprising Indiana cannery demonstrates how special eye on production routines and product movements clinches greater flexibility and new efficiencies in big-volume multi-product operations

TOP HANDLING EFFICIENCY, faster production with minimum operating delays, and swifter service to customers—these are the benefits resulting from advanced production scheduling on the flexible canning lines of Morgan Packing Co., Inc., Austin, Ind.

The company's huge plant, consisting of seven buildings under 23 acres of roof, operates the year around and cans a wide variety of vegetable items, from both fresh and dried products (see diagrams).

The minute products are canned, company fills orders and ships them right out. Firm's ideal (it can't achieve it completely, of course, because of seasonal packs) is to have every lot of raw materials move directly from receiving to production, with finished goods going right to the shipping dock.

However, there are sufficient warehouse facilities for carrying enough stock to provide flexibility in making up orders calling for custom labeling. But very little is stored under the firm's own label.

For the most part, production is astutely scheduled so that it really doesn't call for a great amount of storage space. There's a railroad spur alongside a warehouse that's big enough to spot 22 box cars. And there's a shipping dock for loading 20 semi-trailers as well as sufficient facilities in non-dock areas to load still another 20 trailers.

Impressive Scheduling

Daily production is slated according to sales requirements. And it's done a day ahead through full cooperation of sales, purchasing, production and personnel departments.

Purchasing sees to it that there are sufficient raw materials and containers on hand. Production makes certain that the canning lines are ready to operate. And personnel makes sure there are enough workers lined up without any big daily fluctuations in numbers.

Production is then scheduled on a bulletin board. Supervisors and foremen line up crews and assign them to tasks like getting beans ready for the next day by soaking them overnight.

Company engineered flexibility into its operations, too. Empty cans may be directly fed into production or stockpiled for peak daily or seasonal operations. Production lines can be switched to handle a variety of products, without changing the materials-handling plan very much. And heat-processed canned items can be temporarily stored in retort crates should production get ahead of sales, labeling and case-packing, or making up orders for shipment.

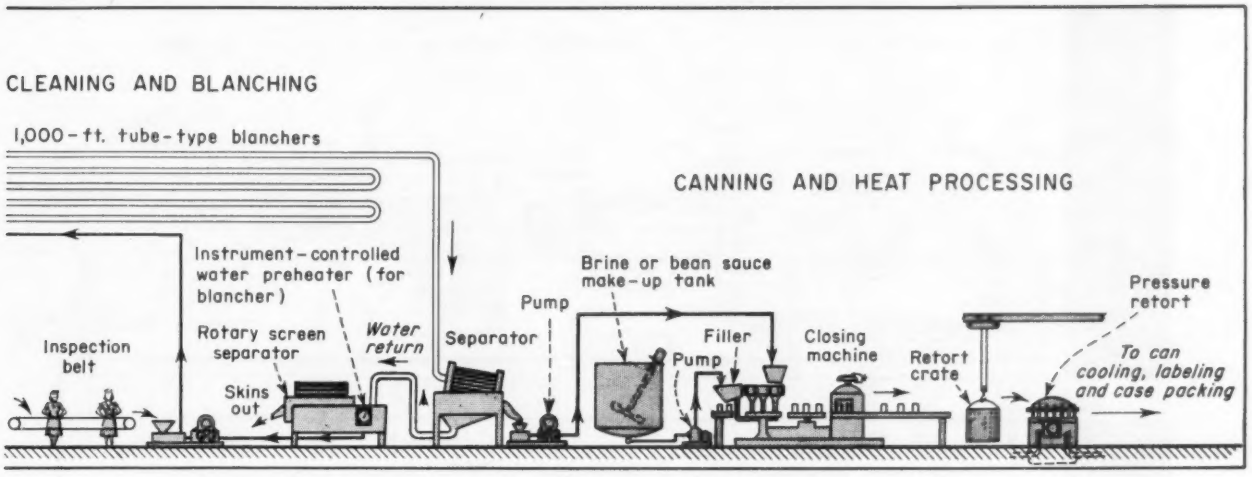
The plant takes a large percentage of the cans turned out by its next door neighbor, American Can Co. And it doesn't have to wait for them. They're directly conveyed along ten lines through an 80-ft., overpass from can-making to filling machines.

All lines are readily adjustable to handle up to 14 different can sizes.

A company-devised system handles overflow from the 450-per-min. can-making equipment to the 300-350-per-min. filling machines. At ten 2nd floor stations, operators pick off ex-

I. H. "JACK" MORGAN and JOHN V. ZIEMBA

Respectively, President, Morgan Packing Co., Austin, Ind., and Associate Editor, "Food Engineering"



Perk Up Your Line Performance

cess with can forks and transfer them to portable dollies (4x6x7 ft.) holding 7,000-8,000 cans. There are sufficient dollies for temporary storage of 2 to 3 million cans.

Cans are also stockpiled in ten storage bins (10x20x100 ft.) in preparation for peak seasons.

Plenty of Water

Company has more than enough clean water pumped at a 2,000-gpm.-rate through a 12-in. pipe from a 2-mile-away river. Actually, the town of Austin takes about one-third of the cannery's water supply.

The water is first collected in two outdoor settling tanks (250,000-gal. capacity). From here, it is pumped to the filtration-purification house, where coagulants (alum and lime) are introduced from four chemical feeders (Wallace & Tiernan). Treated water then flows into three filter beds, each with a capacity of 1,000 gpm.

Following filtration, water is treated by two chlorinators and two ammonia feeders (Wallace & Tiernan), then is pumped to two reservoirs with a total capacity of 4,320,000 gal. Finally, it is pumped to the 75-ft. high, 20,000-gal. capacity water tower, ready for in-plant use.

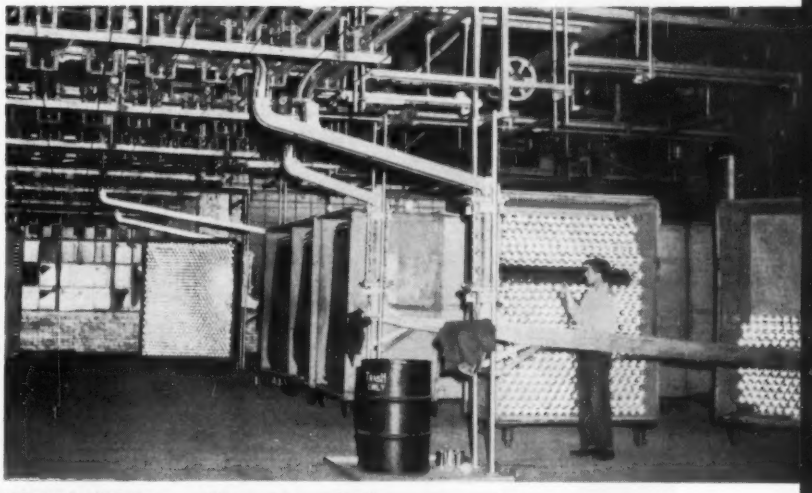
Now for a run-down of a few winter season-canning operations.

Morgan engineers came up with efficient ways to put up hominy. In effect, they've made the process batch-continuous.

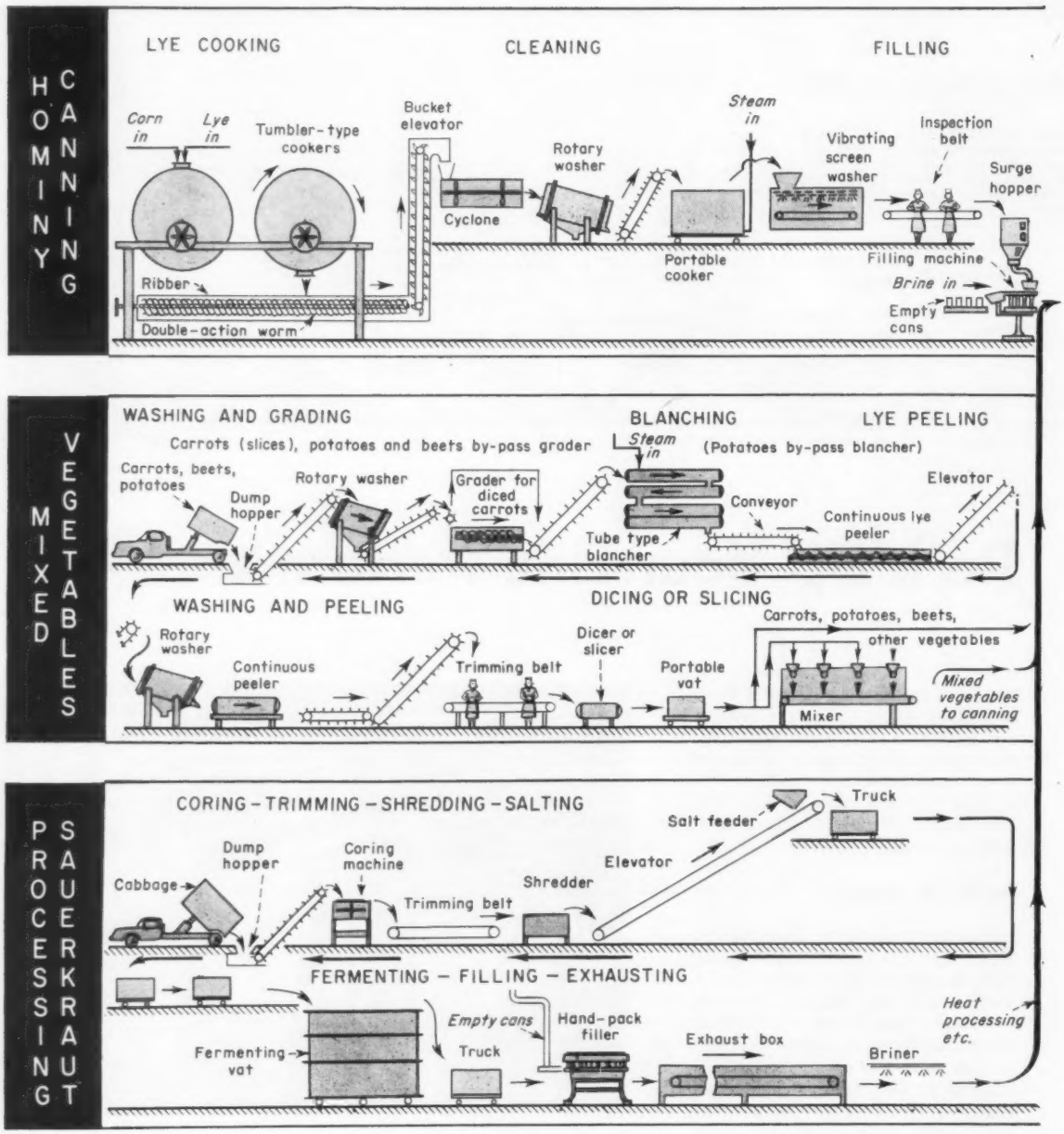
Take the first step—treating clean corn with about 2% caustic to remove hulls. Corn is charged into four rotary, tumbler-type cookers (2½x ft.), each with a capacity of 12½ bushels or 700 lb. After a 20-min. steam cook, caustic is introduced, and cookers are tumbled for 30 min. at 30-rpm.

Volume production is obtained by using the lye cookers in pairs. Operator draws from one until it's empty, then switches over to the other. All this time he is filling and lye-cooking in the other two tanks.

Morgan used to get caustic in drums and put the dry material into solution. Now it is received in liquid form (54% solution) in tank cars, from which it's pumped to two 10,000-gal. storage tanks. As needed, caustic is pumped into 150-gal. drums for fork-truck movement to



TO BALANCE can making with production, excess containers are removed from the ten lines that deliver them and put on dollies on second floor of plant. These cans are fed to production as needed.



lye cookers. It is also used for lye peeling.

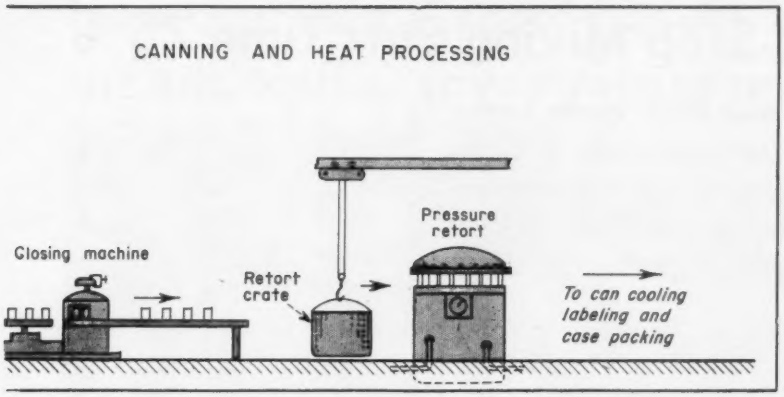
Each pair of cookers discharges into a separate ribber. Here, double-action worms rub off hulls, as the corn is carried to a bucket elevator feeding "cyclones." These 2½x5-ft. units, which are equipped with four rotating paddles, remove remaining hulls. The corn then proceeds through a rotary screen washer (2½x10 ft.), from which a short inclined conveyor belt feeds it into portable cooking vats (27 in.x5 ft.)

These dolly-mounted vats are half-filled (25 bu.) and rolled to steam hook-up stations. Here, steam is introduced below vat's perforated false bottom, and the hominy receives a 30-min. cook. This is followed by a final wash, inspection and filling.

An ingenious innovation is employed for maintaining ample product in the 3-bu. capacity hoppers of filling machines. Each has a built-in, 6-in. wide screen (⅛-in. mesh) which enables operator to observe quantity of product in it. As volume drops, he presses a button that turns on a red light on the floor above, calling for more product.

For efficiency in canning hominy, Morgan installed five rotary-type fillers—four 10-pocket, 140-cpm. units with 4-head can seamers, and a 3-pocket filler with single-head seamer for No. 10 cans. All filling machines are also equipped with float-controlled brine fillers.

The firm employs 48 bean-soaking tanks with a total capacity of 1,920 bags. Soaked, here, are light and dark



kidney, red, pinto, lima, Navy, butter and Mexican beans as well as beans for pork and beans.

To accelerate processing, four lines have been installed to wash beans as they are continuously charged into soaking tanks.

Soaked beans pass over riffle flumes (2x3 ft.), with channel sections spaced 3 in. apart and removable for cleaning. Flumes remove pebbles and other foreign matter. Beans then proceed through company-built string-catchers (½x2 ft.). Device comprises seven rows of ¼-in. dia. upright metal rods spaced 1½ in. apart.

Following inspection, they discharge into a stream of water that carries them through one of three 1,000-ft. tube-type stainless steel blanchers (4-in. dia.). To conserve floor space, these are suspended from ceiling. Blanchers are temperature-controlled, with travel time adjusted through variable-speed drives.

Beans now empty into one of three rotary squirrel-cage separators that remove water and skins. A second, fine-screen separator removes skins from the water, which re-enters blanchers at a controlled temperature. Water heating is by steam injection.

In the event of an emergency, product may by-pass these units and be loaded into portable cooking vats and blanched by live steam.

Beans are now hydraulically transferred to hoppers feeding filling machines. Each hopper alternately feeds two fillers.

Vegetable Line

There are two quickly interchangeable high-volume lines for blanching and peeling carrots (sliced and diced), beets (sliced and diced) and potatoes (diced), along with auxiliary lines for preparing onions, cabbage, celery, peas, beans and limas to go into the mixed vegetable pack.

Carrot blancher comprises four 2x18-ft. tubes, through which washed roots are screw-conveyed to get a 15-min. steam cook. Speed of screws is adjusted by variable-speed drive.

Carrots travel forward through top and back-track through second tubes, and then split up and move, at half speed, through the bottom side-by-side tubes.

They then drop onto a horizontal chain conveyor (2x12 ft.) that feeds a company-built lye cooker (2x90 ft.), enclosed with galvanized metal sheets and mounted 8 in. above the floor.

Following a 2½-min. cook in 10% caustic they are elevated to a rotary reel washer (3½x10 ft.), then go to a continuous rubber-roller type peeler (FMC).

Following inspection, carrots are sliced or diced (Urschel) as desired and moved to fillers. Beets and potatoes are similarly peeled and diced.

Efficient screening has notably "upped" quality of diced carrots, since there's now practically no siftings in can packs. Siftings (about 10% from dicer) are pumped into portable vats and used in the canned dog food department.

Mixed Vegetables

Continuous in-process blending of vegetables is an outstanding company development. The vegetable blender comprises seven V-shaped hoppers, each with horizontal screws of adjustable speeds to proportion different vegetables onto belts feeding three filling machines.

Carrots are proportioned from a 1½x2x4-ft. hopper by an 8-in. dia. auger. Other vegetables in remaining six paired hoppers (14x18x22 in.) are proportioned by 6-, 4- and 4-in. dia. augers. Blender is also used to mix vegetables going into canned soup.

Kraut Making

High-volume production is key to operations in the kraut house containing 105 wooden fermenting vats (70-ton capacity each).

Cabbage heads are dumped from trucks onto a flight-chain conveyor that carries them onto an inclined ramp (60-ton capacity) feeding 27 coring machines. Cored cabbages are chute-transferred to a line of girls who trim and feed them onto a belt traveling to two shredding machines.

Continuous salting (2¼ lb. per 100 lb. of slaw) is carried out as the shredding cabbage is belt-elevated to portable buggies (825 lb. each). Then it is dumped from buggies into fermenting vats.

After 3 months of temperature-controlled fermentation, sauerkraut is removed from vats by a company-built portable unloader. Unit consists of a stainless steel hopper (14x14x14 in.) mounted on an inclined cleated rubber-belt conveyor (1x12 ft.). Entire assembly is lowered and raised in a vat by crank and pulley cable.

As kraut is removed from vat, a 4-ft. long conveyor transfers it to a chute feeding a portable heater—another company-developed unit. Here, with a steam-line attachment and an 18-ft. drag-chain conveyor, hard-packed kraut is torn to loose shreds and heated to 100F.

It is hand packed into cans by two 24-pocket volumetric fillers, then

mechanically loaded into an 8x80-ft. exhaust box. This unit consists of a traveling belt with variable speed drive and 2-in. steam line bleeding into 1-in. lines spaced 30 in. apart. Temperature is controlled by instrumentation. During the tomato pack, box is switched over to cool bottled tomato ketchup.

From here cans are conveyed under a perforated pipe-type brine filler and 10-head rotary tamper, and then to a 4-head seamer.

Spaghetti Filler

Still another ingenious innovation is a company-patented, extremely accurate (± 0.1 oz.) spaghetti filling machine, operating at a speed of 140 cans per min.

Blanched, drained spaghetti is hand-fed into two short 6-in. dia. stainless steel funnels which, in turn, supply a pair of filling tubes ($\frac{1}{2}$x2$\frac{1}{2}$ ft.). Below each tube is a 6-pocket filling plate (from an old filler) that acts as a knife to cut off spaghetti as it is being filled into the No. 300 cans.

Empty cans are conveyed in two rows to the filling machine. Here they hit starwheels that actuate a timer which operates the filler plate under tubes.

Cans from all filling and closing machines are thermally processed in retorts, of which there are 17 rows, 12 to a row. From retorts, crate loads of cans are monorail conveyed in eight 12x100-ft. circulating water coolers. Cans finally proceed to wrap-around labelers, case packers and case gluers, ready for shipment. —*End*

"Er . . . do I hear a motion for adjournment?"

1-Step Mixing Cuts Time 75%

Flavor maker installs homogenizing unit right in mixing tank—thus gets greater uniformity, plus savings in labor costs

GEORGE C. ROBINSON
President, Henry H. Ottens Mfg. Co., Philadelphia

RAPID INCREASES in the cost of doing business have alerted food processors to the need for replacing inefficient equipment with more advanced processing units.

As an example, we at Henry Ottens recently installed a new type mixer in our flavor-making department—and it's markedly improved our product uniformity, while upping output without added personnel.

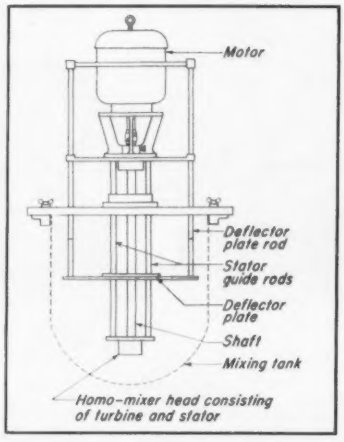
Formerly, it took a man a full 8-hr. a day to mix and package a 55-gal. batch of flavor emulsion. Equipment comprised a mixing tank and a homogenizer. Raw materials were first blended in the tank, then homogenized to prevent separation and, finally drawn off into containers.

With the new equipment—comprising a combination homogenizer-mixer and 75-gal. tank—the man is able to process and package a similar size batch in 2 hr.—a 75% saving in time.

Many of our flavors are highly viscous, and great care had to be exercised in selecting new equipment that would properly process them. Finally we discovered a unit (Eppenbach Homo-Mixer, Gifford-Wood Co., Hudson, N. Y.) that, when installed in a suitable tank, seemed to meet our requirements.

We then submitted materials to the mixer company—ingredients for a batch of butterscotch flavor concentrate (which contains malt syrup and is quite viscous) and for a batch of oleo orange emulsion. These two flavors were processed in one of their lab units and returned to us along with a report of their technologists' findings.

On the basis of this report and the product samples (which were better than our normal products), we ordered a production model 5H Eppenbach homo-mixer. It's equipped with a 15-hp., 220 v., 2-phase, 4-wire, 60-cycle drip-proof, 3,500 rpm. motor. All contact metals are stainless steel. We installed this unit in a 75-gal. stainless, hemispherical bottom tank.



MIXER employs motor-driven turbine rotating in housing, or stator, to draw product from tank bottom, force it against deflector plate, which returns it to tank bottom.

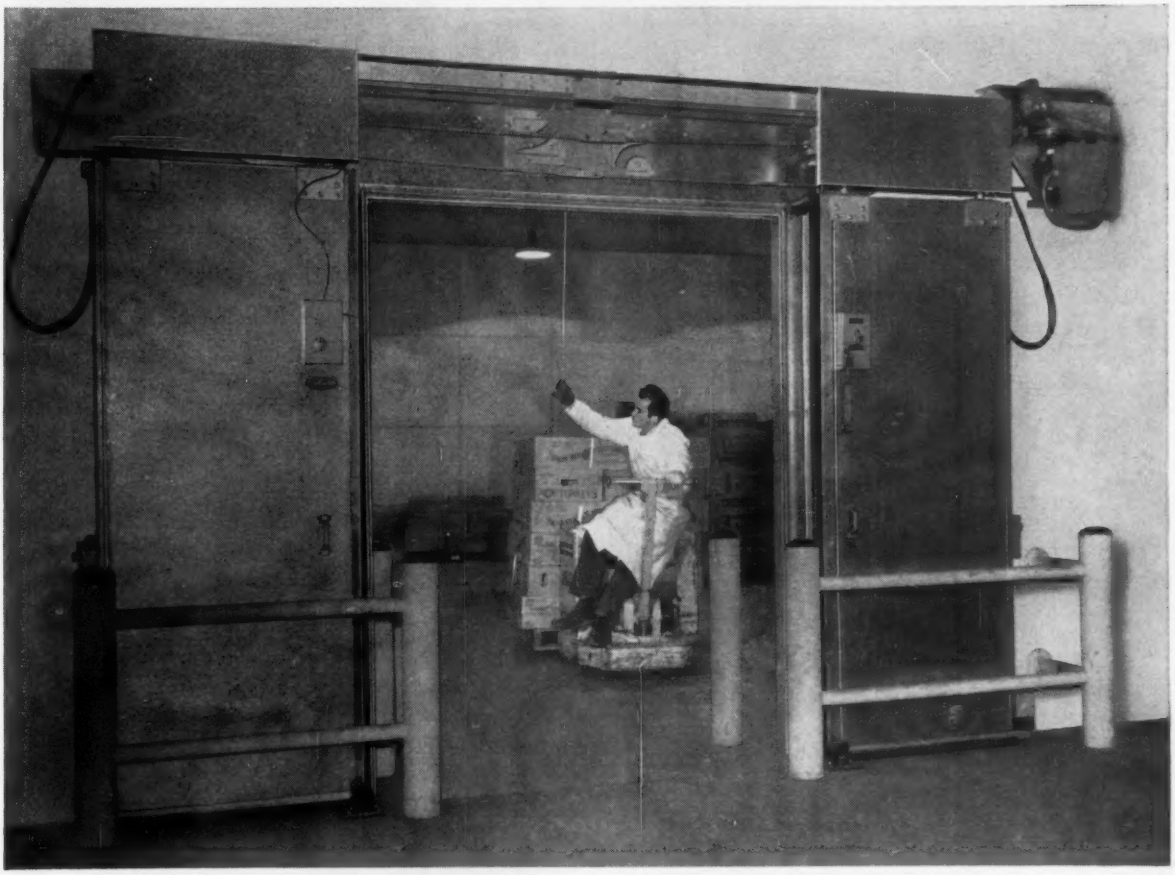
The combination mixing and homogenizing now takes only 10-20 min. Balance of the 2-hr. processing time is consumed in filling products into 1-gal. glass jugs, stainless steel drums, and 1- and 5-gal. polyethylene lined containers.

We arrange our production so that flavors with similar raw materials follow each other. Thus cleaning is minimized. When it's necessary to clean the machine, we merely put in hot water and detergent, and start the mixer, which cleans itself.

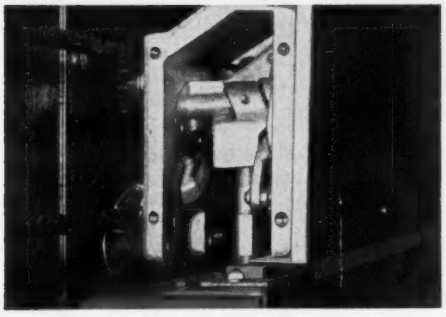
Motor of mixer is coupled to a shaft that terminates in a turbine mixing head or rotor. This rotates in an enclosed housing, or stator, to form the homogenizing head. At high speeds, a pressure differential is maintained between bottom of turbine and surface of materials.

Unrefined material is constantly drawn to bottom of kettle and forced to pass through restricted openings in the homogenizing head. Then it is discharged upward against an adjustable baffle that deflects the mixture toward the tank sides, where it moves back down into the mixing area to repeat the cycles. —*End*

New Jamison *Electroglide** Power Door speeds traffic, saves refrigeration *automatically!*



Electroglide offers famous Jamison Cold Storage Door quality and performance plus a completely new design for power operation. Both bi-parting and single leaf Electroglides are available to meet all job requirements.



EXCLUSIVE CAMLOK COMPRESSION SEAL—Jamison Camlok cams doors "in" against frame and "down" against floor at all points.

These other exclusive features mean dependable, smooth operation.

SHOCK ABSORBER CHAIN LINK—reduces wear and tear

SPRING LOADED SUSPENSION—minimizes power requirements

IMPROVED SAFETY EDGE—sensitive full height and full travel of door

SEALED-IN-OIL REDUCTION GEAR—trouble-free operation, minimum maintenance

High volume traffic can now speed on its way in busy cooler and freezer operations with minimum loss of refrigeration. Electroglide is specifically designed to accelerate truck movement with its instant automatic opening and closing.

Rapid smooth opening—Spring suspension helps doors open easily and smoothly. Doors move "out" and "up", riding on level tracks with gaskets clear of sill and frame.

Electroglide is made for both cooler and freezer use. Write today for new Electroglide bulletin to Jamison Cold Storage Door Co., Hagerstown, Md.

*JAMISON TRADEMARK

JAMISON
COLD STORAGE DOORS

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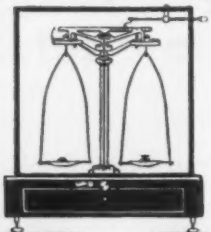
A LITTLE



ALGIN

DOES A LOT!

This unique water soluble colloid solves all these and other problems:

THICKENING	.20%	Will thicken and give good body properties to syrups, fillings, meringues.
SUSPENDING	.20%	Will suspend particles such as cocoa and citrus pulp.
STABILIZATION	.20%	Will retard or prevent water migration and ice crystal formation in frozen foods.
	.15%	Will stabilize cake icings, preventing excessive absorption or cracking and shaling.
	.005%	Will stabilize the foam formation on beer.
EMULSIFYING	.35%	Will produce stable oil in water emulsions even at very low pH. Is most useful in French Dressings.
GEL-PRODUCING	.80%	Will form tender and tasty gels for food uses, such as desserts, fillings, bakery gels.
FILM-FORMING	.15%	Will produce an oil resistant film on paper while 1% solutions will form films suitable for coating food products.

YOURS ON REQUEST: Technical data covering properties and applications of algin products. Simply note application of interest so that we can advise which type of algin product is most suitable for your requirements.

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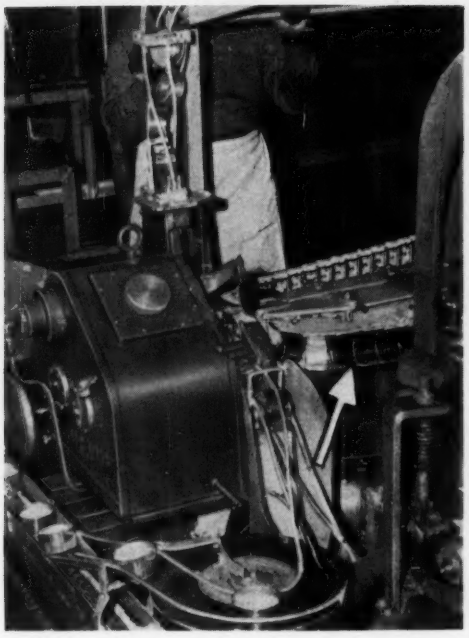
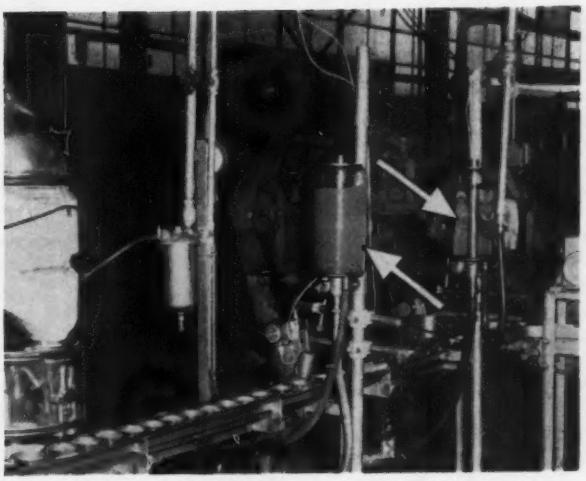




ELECTRIC EYE DISPENERS (arrows above) replace former "oiling trough" as method of adding hot oil to cans. Left: Tuna is formed into roll by continuous shaper (arrow) and fed into cans. Then portion is cut and can rolls to conveyor feed table.

Tuna comes off asparagus line in

Product Switch That Eases Cost Squeeze

Advanced techniques are vegetable canner's trump cards for assuring success of radical winter step

WHAT TO DO with a vegetable-canning plant when there aren't any vegetables?

That problem is faced by canners in many parts of the country during the winter months. No fresh products are available, yet overhead costs continue. And each year the situation becomes more acute, with the increased cost of processing equipment and shortage of good seasonal help.

However, one canner—John H. Dulany & Son, Inc., Fruitland, Md.—has just made a move that may be a solution to its previous winter shutdowns following the canning of sweet potatoes. The company is packing tuna on its asparagus line.

The line was modified by addition of a Caruthers Pak Shaper, electric eye-controlled oil dispensers, and a filled can washer.

ARTHUR V. GEMMILL
Senior Associate Editor, "Food Engineering"

For its process, Dulany uses frozen tuna loins purchased from Japan. They are received in 50-lb. blocks enclosed in plastic bags and paperboard containers. These initially go into the company's 0 deg. F. storage (an area which is maintained above freezing during the regular season to store surplus fresh vegetables such as beans.)

Interesting here is the fact that, although the room was built for 32-4OF., winter temperatures enable its easy maintenance at 0 deg.

Process Summarized

For canning, the tuna is moved to the processing room. Here, the blocks are unwrapped and individual loins spread on trays that fit special wheeled racks.

When they are completely defrosted, the loins are transferred to inspection tables, where off-colored meat is removed, then they are conveyed to the Pak Shaper. This unit forms the meat into a 3-in.-dia. (can size) roll, feeds the roll into a can fed from an overhead track, and cuts off the desired-size section. It operates at 100-140 cans per min. Filled cans roll down a track that turns them closed side down and discharges them onto a rotating table feeding to a chain conveyor.

In a conventional tuna canning line, cans move through an "oiling trough" where, to insure that they are completely filled, hot oil is continuously discharged from an overhead perforated pipe. Excess oil flows over the cans and conveyor and is caught, reheated, and recirculated.

"Eyes" Do the Job

At Dulany's, however, the oiling operation is performed by electric eye-controlled dispensers that meter the desired quantity of hot oil into each can at several points in its travel from Pak Shaper to seamer. These units operate only when a can inter-

rupts the light beam. Thus spillage is practically eliminated. In the operation, small quantities of oil are added to the tuna, then as in a conventional line, salt by a regular star-wheel operated dispenser. Then the can is completely filled with oil by another electric eye unit.

Cans Get Detergent Wash

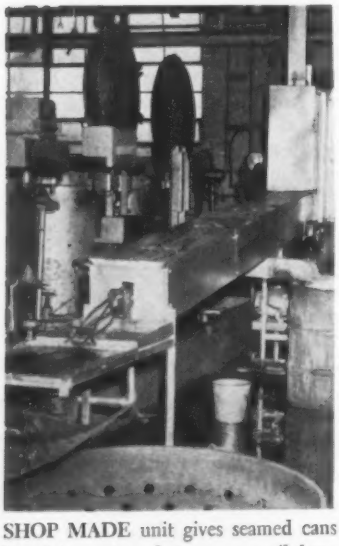
Following vacuum closing, cans have an oily film on their surfaces that interferes with label adhesion. To remove this excess oil, company engineers developed a unique washer that has no moving parts.

Cans leaving the seamer are elevated to a gravity track that feeds them into the top of the washer. And when moving down through the vertical section, each can is sprayed with hot detergent solution that saponifies and removes the excess oil. This solution is reheated and circulated.

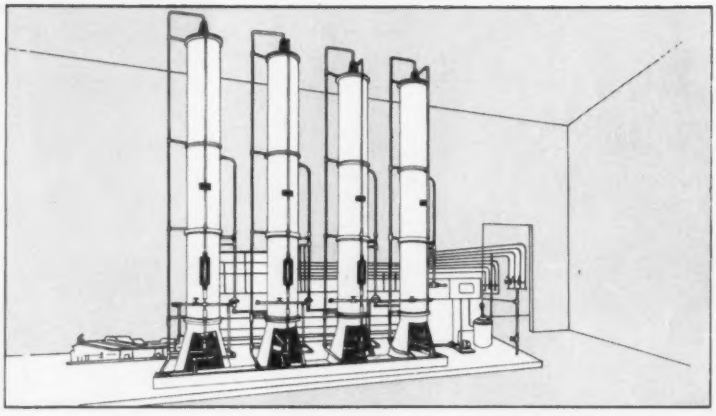
Cans discharge into a vertical track, where they are sprayed with hot water to remove the detergent, then they exit onto an accumulating table. From here they are transferred to retort baskets, by a Busse System.

Following retorting and passage through the cooling canal, cans have a thin film of oil which dries to protect them from rusting, yet doesn't interfere with appearance or labeling.

—*End*



SHOP MADE unit gives seamed cans hot detergent wash to remove oil from surface, then rinses them with hot water.



ITALIAN wine treating equipment comprises columns packed with exchange resins, plus provisions for regenerating them.

Resins Make Wines Faster

In 1 hr. they remove tartrates—whereas weeks in cold storage were previously required . . . Used in both U. S. and Italy, processes cut inventory, reduce investment

ALMOST COINCIDENTALLY, U. S. and Italian wine makers have adopted new high-speed processes that accomplish in 1-hr. an operation that previously required two weeks or more.

In each process, cation exchange resins are employed to dissociate excess tartrates that are conventionally removed from wine or fruit juices by extended storage at about 25F.

In the U. S. process, now operating experimentally at California Grape Products Corp., and other California wineries, a phenolic base sulfonic acid exchange resin is added to the wine in a vat. Then wine is withdrawn from the resin.

No attempt is made to remove all of the tartrates. The amount of resin added is calculated to dissociate only the approximate amount of tartaric acid salts that would precipitate during the cold stabilizing process.

The treatment results in a stabilizing effect that is as good or better than the cold process. It is less harsh and reduces chance of oxidation of the wine.

There is a slight increase in tartaric and malic acids due to dissociation of their salts, but no change in volatile acid, alcohol, or sugar.

Regeneration of the resins enables them to be re-used continuously. Cost of the treatment is estimated at approximately 1c./gal.

Italian Process More Intricate

Called 'Decation,' the Italian process employs two exchange columns—one containing a cationic resin, the other an anionic one—through which the wine or fruit juice is circulated.

In the cation exchanger, potassium and calcium tartrates are broken down. The metallic ions become attached to the resin and are removed from the wine. The hydrogen ions freed from the resin replace the metallic ones to form tartaric acid, which is much more soluble than the tartrate salts.

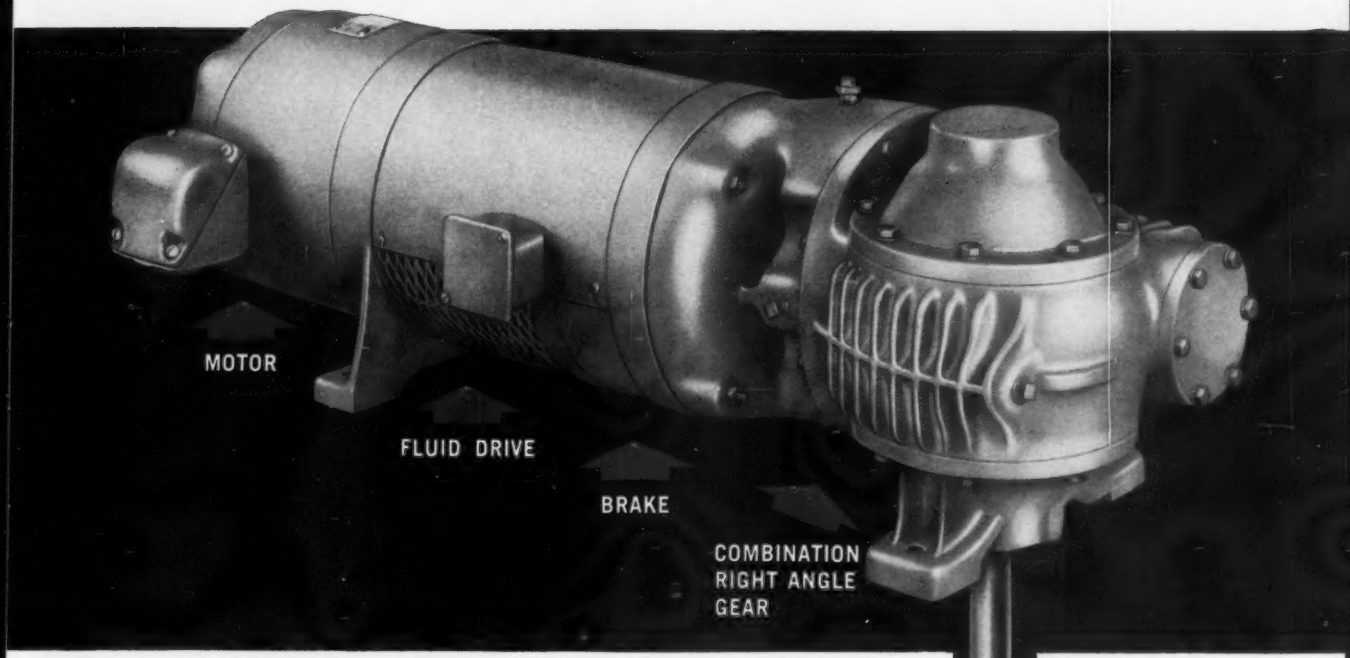
In the second column, the acid radical is removed, thus preventing buildup of acid in the wine.

Regeneration of the two resins is accomplished in the columns by washing with water, followed by circulation of acid and basic liquids. Cycle requires approximately 8 hr.

The clarified and stabilized wine may be bottled immediately following either treatment.

Information on the Italian Decation process was supplied by Diego Strainiero, McGraw-Hill World News, Rome.

LOOK INTO MASTER ELECTRICAL MECHANICAL POWER PACKAGES



for built-in productive assemblies

... And you'll see ways to cut costs and increase your profits. How? By eliminating unwieldy or makeshift power assemblies.

Master Motors, Gearmotors, Unibrakes, Fluid Drives and Speedrangers are available in standard Master unit sizes beginning with ⅛ H.P. With Master it's easy to get the *right* shaft speed, the *right* construction features, the *right* mounting ... all combined in one compact, efficient drive. All components are made by Master, thus assuring you of an impartial recommendation for the best drive for your requirements.

Look to Master for your *single unit* power packages ... all from one single source.

Electric Motors	**⅛-400 H.P.**
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THE MASTER ELECTRIC COMPANY Dayton 1, Ohio

DIVISION OF RELIANCE ELECTRIC AND ENGINEERING CO.

Looking for cost leaks? Look at your steam traps

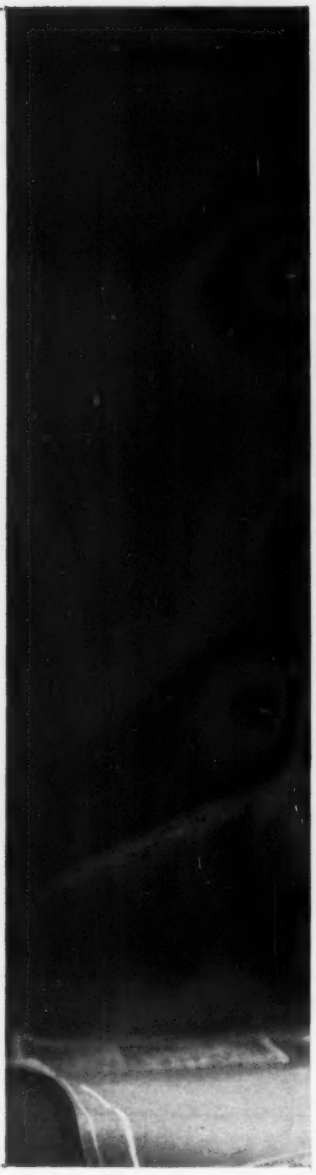
Engineering approach to steam trapping can save thousands a year on costs of fuel, trap maintenance, process cycle time, and uniformity of product quality

Plant and process engineers all across industry have found that Sarco *Production-Planned* steam trapping can pare operating costs by thousands of dollars a year.

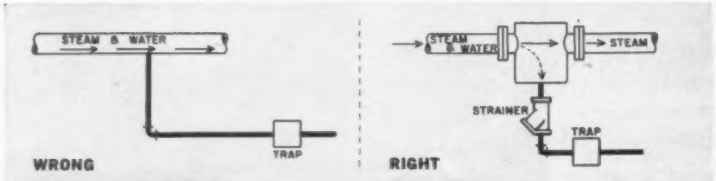
Production-Planned steam trapping is an engineering approach to the problem of getting full design values of heat transfer from steam using equipment. Scores of case histories show that it can make substantial savings and improve processing efficiency. At the same time, costly trap maintenance can be greatly reduced.

In Sarco *Production-Planned* steam trapping, traps are matched to the job by *type* as well as size. They are properly placed, correctly installed. And, to keep down maintenance and replacement costs, every trap is top-quality.

It may pay you well to take this engineer's-eye view of *your* steam trapping. And why not have a Sarco representative look over your system with you? His suggestions will be completely objective because Sarco—and only Sarco—makes a steam trap for every basic requirement. Quality? Recognized everywhere for half a century.



Production-planned systems make best use of traps



As the two illustrations above show, correct application of steam traps is as necessary as using the right trap. In the hook-up on the left, the lack of a condensate collection point plus the long leg to the trap will result in condensate's flowing past the drain point, possibly causing water hammer. The correct way to install the trap is shown at right, placed close to the drain point. A *strainer* should be placed before *any* trap to prevent entrance of scale or other foreign matter into the trap.

This is just one example of the way your Sarco representative can help you plan your steam system for maximum production.

Traps must be matched to job for best system performance

No single type of steam trap will perform well in all applications. Each type has a range of applications for which it is best suited. For optimum efficiency these differences must be taken into account; traps must be chosen for their operating principles as well as their size and pressure rating.

Sarco can give you impartial help in selecting traps because only Sarco makes the five basic types. With Sarco, it's simple —one source, one responsibility, for all your trapping needs.

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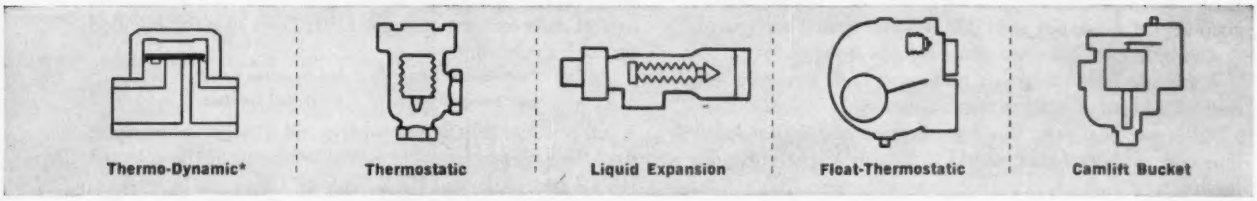
Only Sarco makes these five basic types of steam traps



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Take these two steps to Production-Planned steam trapping:

(1) Write today for Sarco literature; (2) Talk with your Sarco representative. He can help you check your trapping requirements, and he has—or will quickly get—the right answer to any unusual trapping problem.

*T.M. U. S. Pat. No. 2,817,353

SARCO
COMPANY, INC.
635 Madison Ave., New York 22, N. Y.

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USCOFLOW PLASTIC PIPE

New black UscoFlow Utility plastic pipe and fittings provide economical corrosion resistance—inside and out

A blend of styrene-base resins and synthetic rubber to give good impact resistance and high, effective tensile strength...

A simple installation—rapidly solvent welded...

A friction-free finish that maintains high flow-rate and resists build-up of scale or other deposits...

An economical price to solve corrosion and high installation cost problems that would ordinarily chew into your profits...

All this is the *new* UscoFlow line of black plastic pipe and fittings, specially designed for economical and efficient handling of fluids. It has already proven its long service life, free of maintenance and downtime, and is recommended for such applications as

salt-water lines	**fresh-water lines***
natural-gas lines	**electrical conduit**

A full selection of UscoFlow pipe and fittings—plus expert engineering assistance—is available at any of the selected "U. S." Distributors, at "U. S." Branch Offices, or by contacting us at Rockefeller Center, New York 20, N. Y. In Canada, Dominion Rubber Co., Ltd.

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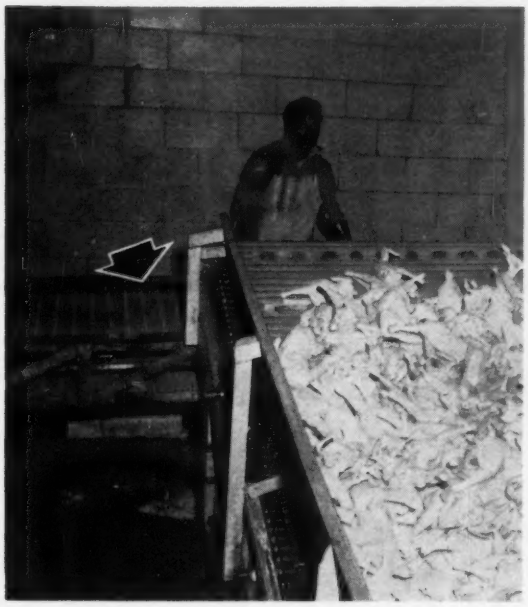
Mechanical Goods Division

United States Rubber

See things you never saw before. Visit U. S. Rubber's new Exhibit Hall, Rockefeller Center, N. Y.



Wire Belts Speed Poultry Packing With Less Labor

When Maryland Chicken Processors, Inc., Snow Hill, Md., installed a series of wire mesh belts to handle dressed poultry packaging, it increased production on the line 50% while reducing number of workers from 10 to 6.

With the new installation, which has a capacity of 120 birds per hr., the eviscerated chickens are dumped from ice cooling tanks onto an inclined wire belt (Cambridge). The belt (left photo) has an open mesh that permits instant draining of the cooling water.

At discharge end of this belt (arrow in left photo) birds drop onto another conveyor running perpendicular to it. Here further drainage occurs. This conveyor carries the chickens to a packer who places them in shipping containers (right photo). These go to a cold storage room to await transfer to refrigerated over-the-road trailers.—*J. F. Reid, Cambridge, Md.*

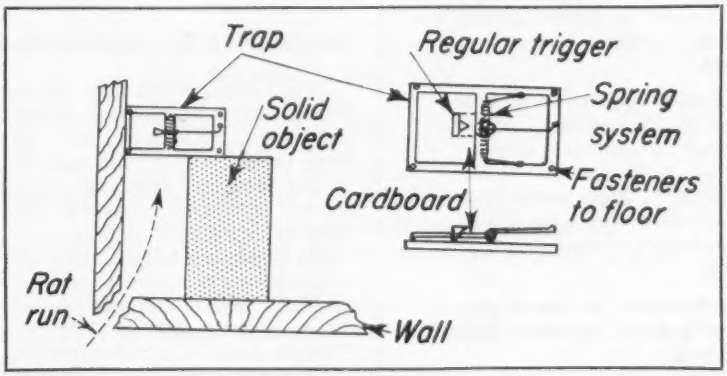
Plastic Bag Saves Man-Hours

Using a polyethylene bag has cut to 3-hr. a slow, laborious 2-day tank cleaning job at A. F. Murch Co., Paw Paw, Mich.

Company has six 52,000 gal. redwood tanks in a 30F. room that it uses to precipitate tartrates and other insoluble from fruit juices and wines.

Previously it took a man 2 days to scrape the tartrates from the inside of a tank following removal of the "settled" wine. This was a slow, hard job.

Now he lines each tank with a poly bag before filling it. After required storage period, juice or wine is pumped out leaving the residue in the bag. Then bag is removed and discarded. And it takes only about 3-hr. to insert and remove a bag.—*FE Staff.*



Shortcuts to Better Rodent Trapping

Here's a practical method for increasing effectiveness of the ordinary mouse or rat trap.

Those on the market today require regular rebaiting to produce a consistent scent that will lure the rodents. And to be caught they must come in contact with the relatively small "trigger area." This area can easily be increased by use of a piece

Atlas

ENGINEERED FLOORS END COSTLY MAINTENANCE

. . . provide lasting beauty!

Atlas Food Plant Floors combine lasting beauty and long service with a construction that permanently ends costly maintenance. Since these floors are completely corrosion-resistant thay are not attacked by any food acids or harsh cleaning agents. Patching is never required.

Individually engineered to your exact specifications, they are not affected by expansion, contraction nor thermal shock. In addition, Atlas floors retain their attractiveness even in the face of severe impact or continuous truck traffic.

Let Atlas show you how to permanently solve your food floor problems.

Write for your copy of Bulletin 3-2.

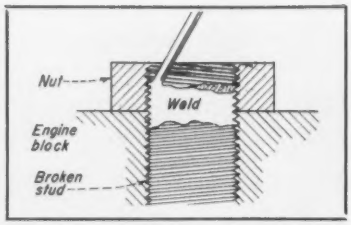
ATLAS MINERAL PRODUCTS COMPANY
MERTZTOWN, PENNSYLVANIA

Practical Ideas

of cardboard through which the bait holder passes (see left drawing above), resulting in a much larger area of sensitivity.

For best results, the cardboard should not be larger than the "trigger" half of the trap.

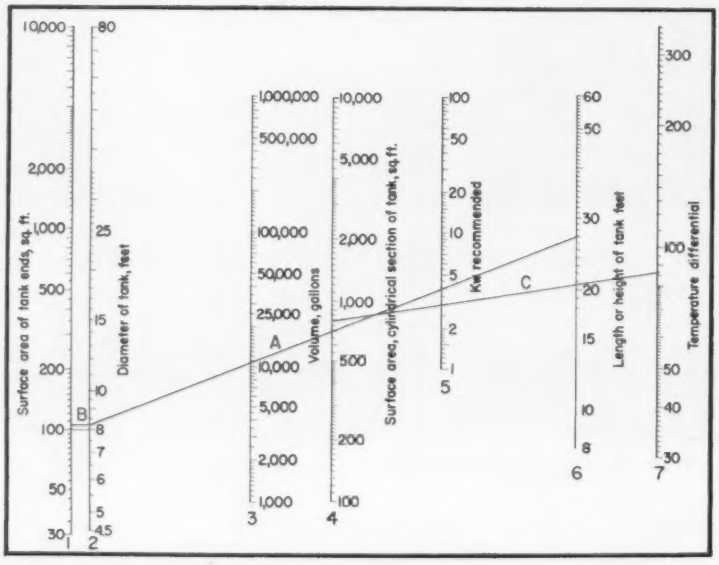
Another aid to more effective trapping is blocking off "rat runs" (right drawing) so the rodents must pass over the cardboard trigger on the way to and from his den. These runs are easily detected by spreading a thin layer of dust or flour on the suspected area.—*Ronald N. Laberge, Consulting Engineer, Ann Arbor, Mich.*



Removing Broken Stud

A broken stud in an engine block, pump housing, or other equipment can sometimes be a problem. The usual drilling out method can be

(Turn page)



For Figuring Electrical Heating of Storage Tanks

When stored in bulk tanks, viscous liquids such as molasses, animal fats, shortenings, and heavy fuel oils, must be heated to permit pumping.

One means of doing this is by electric heaters which maintain desired temperatures at all times.

To enable fast calculations of the electrical energy needed to maintain desired temperatures in outside tanks, Hynes Electric Heating Div., Turbine Equip. Co., Mountainside, N. J. prepared the above nomograph.

It is based on tanks insulated with 3 in. of rockwool, or equivalent, and an average wind velocity of 15 mph. Additional capacity must be installed when it is desired to raise temperature of tank contents.

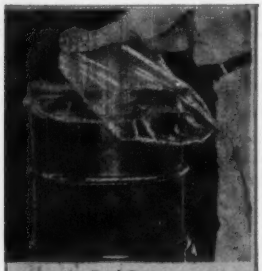
Here's how chart works: Determine recommended kw. rating of heater to maintain contents of an 8 ft. dia. x 26 ft. 8 in. long insulated tank at 110F. if ambient temperature is 25F.

A. Connect 8 ft. mark on scale (2) with 26 ft. 8 in. mark on scale (6) by straight line A. Intersection of this line with scale (4) gives area of cylindrical portion of tank—660 sq. ft.

B. To determine area of the two ends, draw horizontal line through 8 ft. mark on scale (2) to scale (1) —100 sq. ft. Then add 660 and 100 for total surface—760 sq. ft.

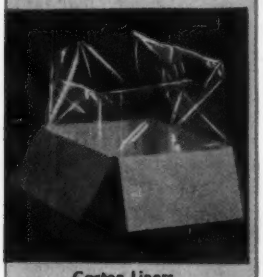
C. Connect 760 on scale (4) with 85 (110-25) on scale (7) by straight line C. Intersection of line C with scale (5) gives kw. required—2.8.

Scale (3) was added to indicate volume of tank (gal.)—*FE Staff*

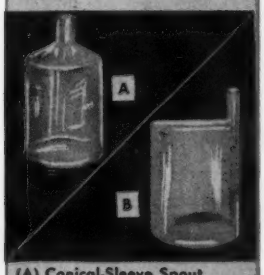


Peel-Over

"All-Chem" Spout*



Carton Liners



(A) Conical-Sleeve Spout
(B) Flat-Sleeve Spout

Manufacturer of the famous "TWIN-SURE" DOUBLE-SEAL Leak-proof Liners

Tie-Off

PROTECTIVE'S

SUCCESS!

The First and The Best

"POWER-SEAL"*

ROUND

PLASTIC LINERS

FOR

DRUMS · CANS · PAILS

and SPECIALTIES

All Diameters · All Heights

SCIENTIFICALLY sealed **POLYETHYLENE,** Mylar, and Copolymer Vinyl—with guaranteed safety.

PERFECTLY made to insert easily and fit exactly all types of ROUND CONTAINERS.

EFFICIENTLY made for top tie-off; for peel-over with separate disc-top -cover; or with spouts, including our special HEAVY DUTY "ALL-CHEM"* LINER for attachment to Rieke Flexspout.

LOGICALLY made to solve "square pegs in round holes" with simplified round-liners to fit ROUND CONTAINERS—ECONOMICALLY.

Write, wire, or 'phone us collect—for information and free samples.

PROTECTIVE PLASTIC PACKAGING PRODUCTS FOR INDUSTRY

PROTECTIVE LINING CORPORATION

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How does Carling's make every cool stein

TASTE THE SAME?

Accurate control is the answer. For instance, to make sure every drop of Carling's is formula-perfect, more than a dozen of these Neptune meters accurately measure and record liquids used in various stages of the process at Carling's new brewery in Natick, Mass. Principal uses are in finishing and blending, in filtration and carbonation rooms, and in wort processing.

Flow of liquids is registered automatically and continuously by the Neptune Meters with big time-savings over the batch-measuring methods previously used. According to Roger D. Williams, plant engineer, the Neptune meters are accurate and trustworthy, and are valuable for inventory control in addition to quality and uniformity control.

Find out how Neptune Meters will benefit your operation by sending for Meter Application Bulletin 566-EF.

NEPTUNE METER COMPANY
19 West 50th St., New York 20, N.Y.

NEPTUNE *liquid* METERS

BRANCHES IN ATLANTA • BOSTON • CHICAGO • DALLAS • DENVER • LOS ANGELES
LOUISVILLE • NO. KANSAS CITY, MO. • PHILADELPHIA • PORTLAND, ORE. • SAN FRANCISCO (MILLBRAE)
IN CANADA: TORONTO 14, ONTARIO

Practical Ideas

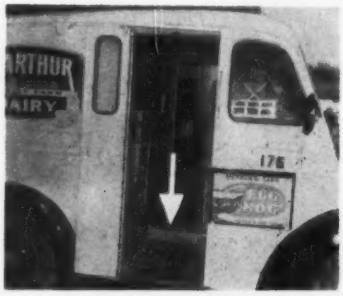
time consuming, and can cause damage to the threads in the casting.

Unless the break is very deep, the stud can easily be removed by placing a nut of proper size over the hole in the casting and building up the stud into the nut with an electric weld (see drawing).

Heat from the weld loosens the stud and it may be easily backed out with a wrench, leaving the threads in the block undamaged.

When break is below surface of block, weld may tack itself to the casting. However, it breaks loose easily since the weld has much more bearing on inner surface of the nut than on the casting.

If weld breaks loose from stud the first time, try again. I have seen many studs removed by this method, and at no time were more than two attempts needed. Usually the stud comes free on the first try.—*Charles Smith, Jr., P. O. Box 498. Exmore, Va.*



Slipping Hazard Reduced With Abrasive Tape

Drive shafts for milk trucks in the McArthur Dairy fleet are enclosed in metal housings that pass through the middle of the cabs (arrow in photo).

As route salesmen habitually stand

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Send your ideas to FOOD ENGINEERING.

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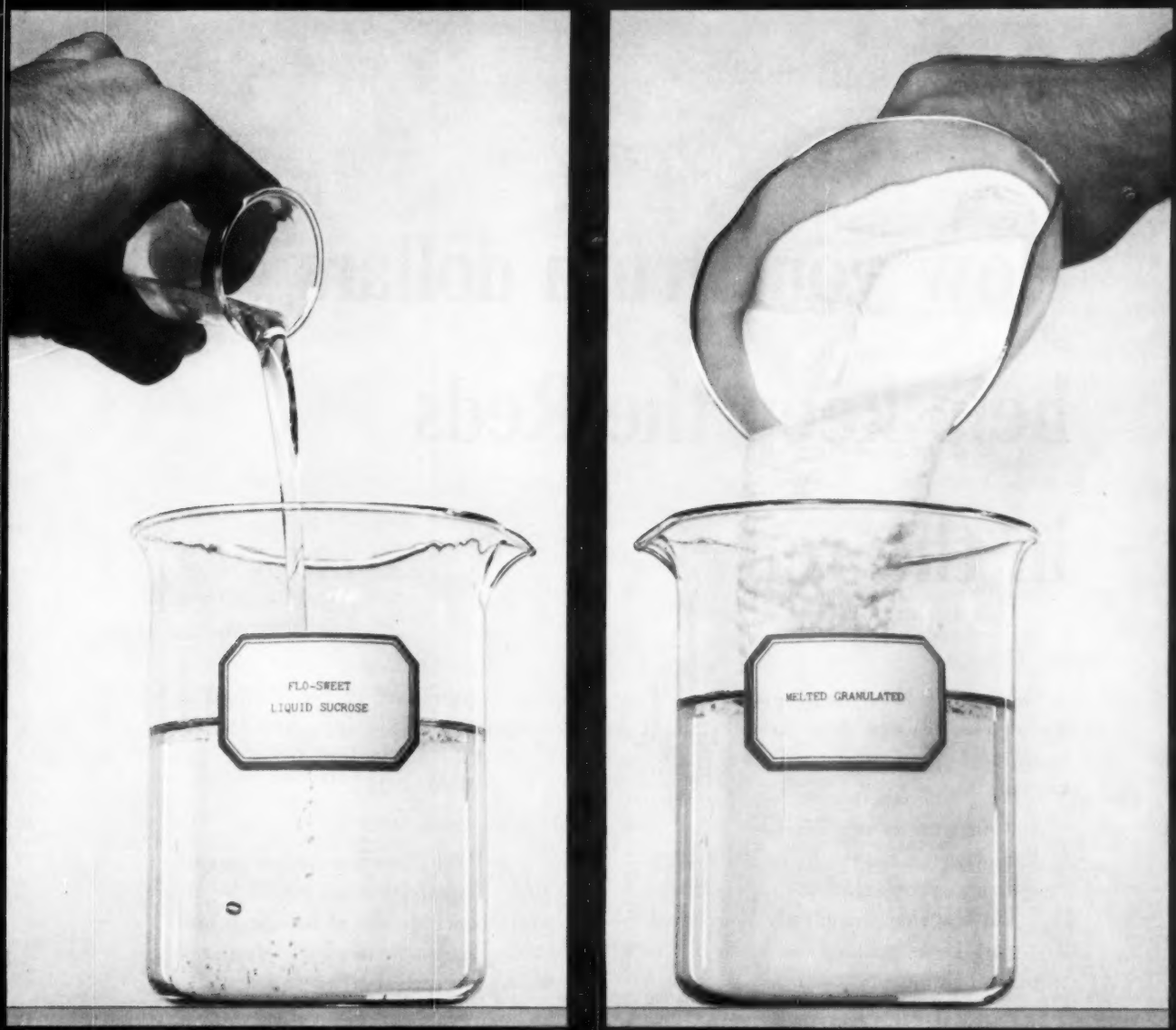
Just send us the facts about your idea and its application. And include a free-hand sketch or snapshot to show how it works.

We'll do the finished writing and drawing for you.

Send your idea today, before you forget. Address it to Practical Ideas Editor, FOOD ENGINEERING, 330 W. 42nd St., New York 36, N. Y.—The Editors.



Color plates made direct from unretouched Ektachrome transparencies

TALK ABOUT SUGAR Quality

You can't make a good liquid sugar by dissolving granulated sugar in water!

Nothing looks purer than the sparkling white crystals of granulated sugar. But when they are dissolved in water, as the photograph on the right shows, a certain amount of impurity of color shows up. And color is one good indication of sugar purity.

For more than a quarter century Flo-Sweet has been *the* pioneer in the development of a truly top quality liquid sugar. As the photograph on the left shows, Flo-Sweet today is so pure that it is hardly distinguishable in color from distilled water!

With today's trend toward higher and higher quality, only the best ingredients are good enough for the discriminating food producer. We invite you to compare Flo-Sweet with any other sugar, liquid or granulated, on any basis that you choose: color, taste, or laboratory analysis. We are confident that you will be impressed by the results.

For this is true sugar quality—You can see the difference.

FLO-SWEET

FIRST IN LIQUID SUGAR

REFINED SYRUPS & SUGARS, INC.

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SERVING INDUSTRIAL SUGAR USERS EXCLUSIVELY FROM
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How your truth dollars help keep the Reds in the red

• The truth dollars you give to Radio Free Europe help keep truth on the air behind the Iron Curtain.

And the truth is an enormously disruptive force to the Reds. For it keeps their captive people thinking . . . wondering . . . and less than completely dominated. The truth keeps needling the Reds. Breaks through their monopoly of lies. Keeps them unsure. Off balance. And thus the truth keeps up to forty fully armed Red divisions tied up policing Russia's satellite countries. Forty divisions, mind you, that might otherwise be put to more aggressive use elsewhere . . . and who knows where?

Your truth dollars keep the 29 super-powered transmitters of the Radio Free Europe network on the air . . . broadcasting the truth behind the Iron Curtain . . . every hour of every day.

Why *your* truth dollars?

Because Radio Free Europe is a private, non-profit organization supported by the voluntary contributions of American business and the American people. And *your* dollars are urgently needed to keep it on the air . . . to help operate its transmitters, pay for its equipment and supplies, and its scores of announcers and news analysts in 5 languages.

Help keep the Reds in the red. Send your truth dollars to Crusade for Freedom, care of your local postmaster.

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Your Dollars Are Needed To Keep Radio Free Europe On The Air

SEND YOUR TRUTH DOLLARS TO

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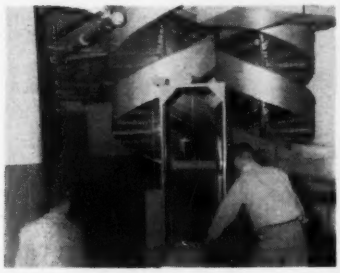
on these housings when moving cases and lifting bottles from them, there was always a possibility of injury by slipping. To prevent this, the housings were covered with an abrasive sheet material, similar to emery cloth with an adhesive back (Minn. Mining & Mfg.).—*W. J. Holmes, Miami.*



Chute Speeds Delivery

Faster delivery of finished product to the shipping department and easier sorting of cartons is achieved through use of spiral chute (shown above) at Tasty Baking, Philadelphia.

Previously, cakes and pies were routed from various production floors on hand carts which were moved on elevators to the 1st floor shipping department. Routing was slow as elevators had to stop at each of the plant's four floors to pick up merchandise.

Cartons sent down on chutes are properly spaced to avoid banging. Handlers pick them up and sort them according to product type for placement on delivery trucks.—*FE Staff.*

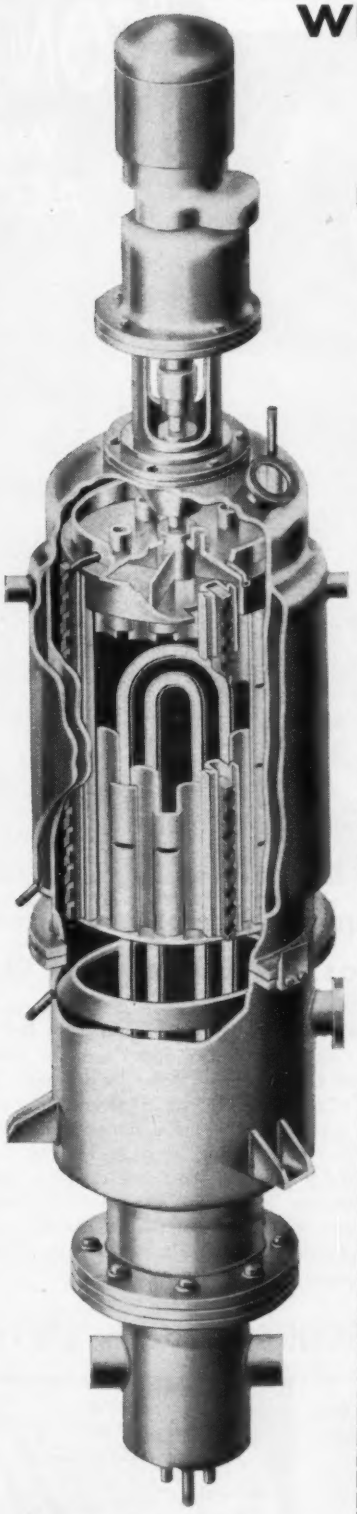
Portable Stitching Machine Aids Casing Operation

Unless all casing is done at one point in a factory—which is unusual—either the stitching machine must be moved to the various casing areas, or empty cases must be transported. As empty cases are bulky, the latter is relatively time-consuming, and a large number cannot be hauled per trip with a hand truck.

But stitching machines are much heavier than appearance indicates, and they are not mounted on wheels by the manufacturer. However, one cannery manager mounted his on wheels and made a definite saving. He also provided a means of lowering the machine to floor level to provide greater stability during its operation. —*Purdue Expt. Sta. Bul. 528.*

Want to evaporate foods faster

without ruining their flavor?



Cut-away view of Wiped-Film Evaporator illustrates unique action of floating teflon wiper blades which quickly spread uniform thin product film over evaporating area.

Look then to Pfaudler and the wiped-film evaporator.

This unique new machine spreads your product in a very thin, uniform film which promotes higher heat transfer and faster evaporation.

A floating teflon blade acted upon by centrifugal force sweeps the product around the peripheral evaporating surface while under constant vacuum.

The entire design works to keep your product evaporating almost instantaneously so there is little or no chance for thermal decomposition which might change flavors or otherwise harm product quality.

Because it is so efficient in its heat transfer and fast feed-through, the wiped-film evaporator may well answer your need for lower processing costs.

Lab and pilot plant models available

Test your own product in either the 2-inch lab model or the 12-inch diameter pilot plant model. When you are ready for full production we can supply units from 4 to 100 square feet of evaporating area.

Check the coupon for complete technical data on the Wiped-Film Evaporators and other integrated process equipment for the food industry by Pfaudler.

PFAUDLER FOOD EQUIPMENT

Pfaudler Permutit Inc.

Dept. FE-48, Rochester 3, N.Y.

Please send bulletins on ☐ Wiped-Film Evaporators ☐ Heat Exchangers ☐ Tanks—Mixing and Storage ☐ Centrifuges ☐ Conical Dryer-Blenders ☐ Rotary Piston and Gravity Fillers.

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Food Industry Leaders

"CONTAINERIZE" WASTE AS IT ACCUMULATES

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Low-Investment Dempster-Dumpster System Cuts Waste Disposal Costs... Keeps Plant Clean

Enclosed temporary storage of waste, sludge, food scraps and trash is the key to plant cleanliness and low-cost disposal. Food industry leaders place clean, big-capacity Dempster-Dumpster Containers at major inside and outside accumulation points. Waste is "Containerized" as it generates . . . costly re-handling is eliminated. One man and one truck-mounted Dempster-Dumpster dispose of all waste from your plant . . . picking up, hauling and dumping Containers on a planned shuttle schedule. You may own this low-investment System or your local Dempster-Dumpster Contract Hauler will furnish the Containers and empty them for a nominal fee. Name of your area Contract Hauler furnished on request. Write today for your copy of the free manual, "How to Cut Waste Disposal Costs."

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Dept. FE-4 Dempster Brothers, Knoxville 17, Tenn.
Please send without obligation your new booklet, "How to Cut Waste Disposal Costs."

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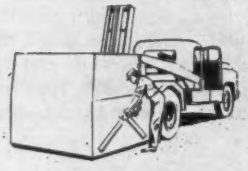
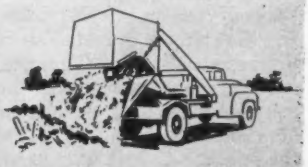
THE DEMPSTER DUMPSTER® SYSTEM



"Containerized" waste is picked up . . .

hauled . . .



. . . and dumped

AGAIN AVAILABLE!

POWELL NICKEL and MONEL* VALVES

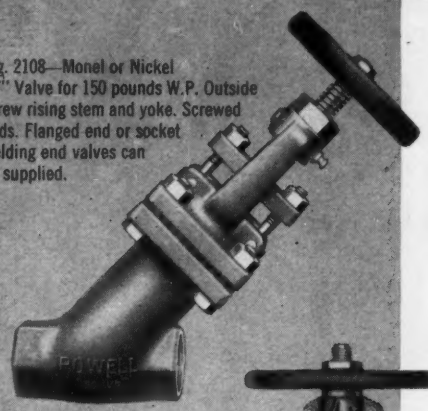


Fig. 2108—Monel or Nickel "Y" Valve for 150 pounds W.P. Outside screw rising stem and yoke. Screwed ends. Flanged end or socket welding end valves can be supplied.

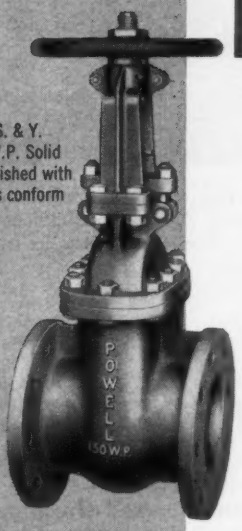
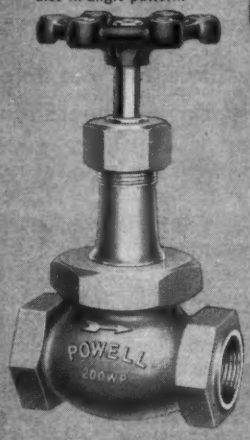


Fig. 2453 SG—Large size O.S. & Y. Gate Valve for 150 pounds W.P. Solid wedge disc. Can also be furnished with split wedge disc. Dimensions conform to latest standards.

Fig. 1836—Monel Metal
Fig. 1839—Nickel
Small Union Bonnet Globe Valve for 200 pounds W.P. Available with screwed, flanged or welding ends; also in angle pattern.



Now that restrictions have been lifted on the manufacture of Nickel and Nickel Alloys, we have produced a wide line of NICKEL and MONEL* METAL VALVES. All are ready for immediate delivery!

When your flow control requirements call for Nickel or Monel* Metal Valves your local Powell Valve Distributor is the man to see. There's one located in all principal cities. Or write to us for complete information.

THE WM. POWELL COMPANY
Cincinnati 22, Ohio
dependable valves since 1846

*Registered Trade Name of The International Nickel Co.

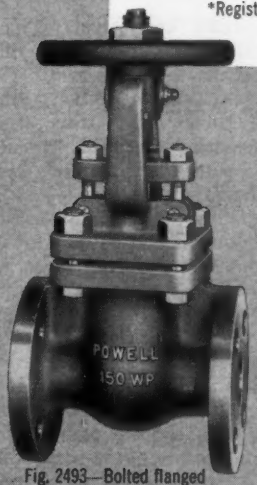
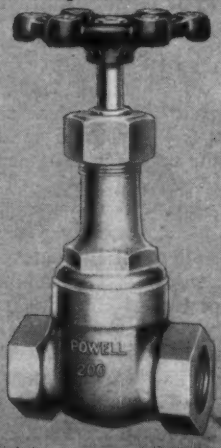


Fig. 2493—Bolted flanged bonnet Gate Valve for 150 pounds W.P. Outside screw stem rises through revolving bushing in upper yoke. Interchangeable solid or split wedge discs. Screwed or socket weld end valves also available.

Fig. 1828—Monel Metal
Fig. 1830—Nickel Inside screw rising stem Gate Valve for 200 pounds W.P. Accurately guided solid wedge disc. Also available with flanged or socket weld ends.



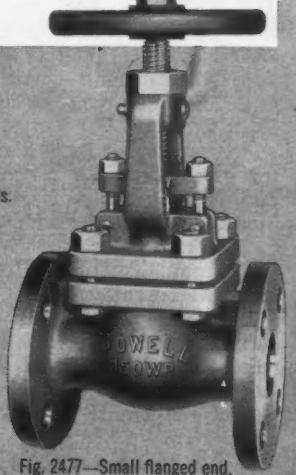
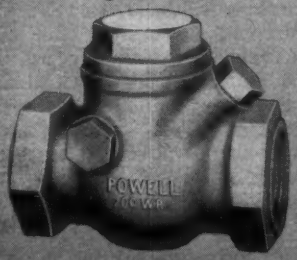


Fig. 2477—Small flanged end, outside screw rising stem and yoke Globe Valve for 150 pounds W.P. Bolted flanged bonnet. Can be furnished with screwed or socket weld ends. Angle Valves available.

Fig. 1843—Monel Metal. Fig. 1845—Nickel. Small size Check Valve for 200 pounds W.P. Screwed-in cap. Has straightway flow area through valve body when disc is in wide open position. Can also be supplied with flanged or socket weld ends.



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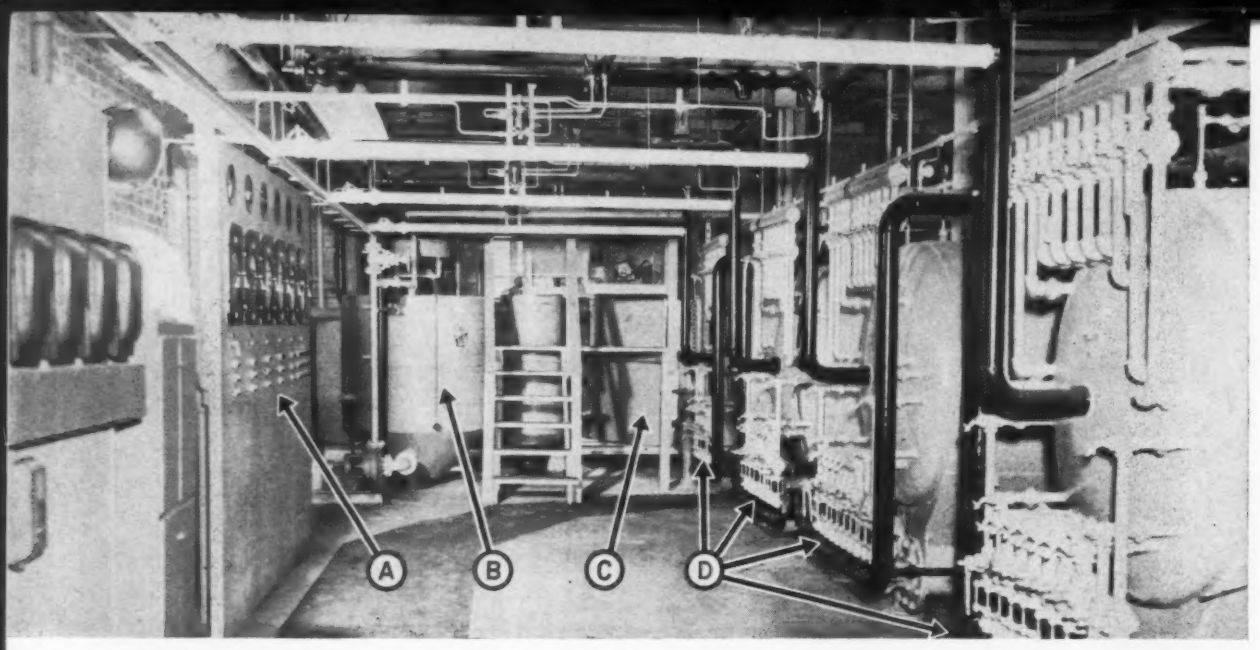


AUTOMATIC THICK-JUICE FILTER STATION has five units, only requires manual attention when sluicing-down or changing leaves. On control panel (A) are ranged pressure gages, Taylor Fulscope controllers and recorders, flow regulators, signal lights, and start-stop buttons. At (B) is **precoat tank, and at (C)** sluice tank. Filters are set in a bank (D). Coming in overhead are feed lines (dark piping) and precoat lines (large white pipes).

Engineers Big Filtering Economy

Costs plummet more than 50% when automatic, self-sluicing filters are put into action . . . Sharp climb in flow rates, high volume flexibility mark new operation

TO REPLACE our sturdy, but labor consuming, thick-juice plate-and-frame filter presses with advanced-design units—having automatic controls—was our goal at Union Sugar Co.

Accordingly, we tested various filters over a three-year period. And early in 1956 we finally installed a Model RSC filter (Sparkler Mfg. Co.) for tests.

The runs that followed disclosed these five advantages—

1. By using Dynel cloth covered plates and selected filter media, flow rates of 12.5 gal./sq. ft./hr. could be attained—compared with the 2.5-gal. rate of the former plate-and-frame units.

2. Flow volume through this filter could vary widely without significantly effecting juice clarity or the length of the filter cycle.

ALLEN WOODS

Superintendent, Union Sugar Co., Betteravia, Calif.

3. The simplicity and dependability of the filter's operation coupled with its capacity to handle load changes, indicated that a station equipped with these units easily could be automatically controlled.

4. This would permit reduction of this station's labor requirement — from three operators to one. And actually the one man is needed only when sluicing-down or changing filter plates. Otherwise the station is "automated".

5. These compact units could be installed in our available area and still leave ample working and clean-up space. In contrast, there was severe congestion with the old plate-and-frame station because of the size of the units.

To handle the juice flow from an average 3,600 tons daily of beets, we selected five RSC's each with areas of 300 sq. ft. These smaller units were chosen for two reasons: To lighten the manual handling of filter leaves when removing them from a filter, and to provide maximum flexibility of operation.

Then came our move to operate the filters automatically from a central control panel. The instrumentation design was based on the following requirements:

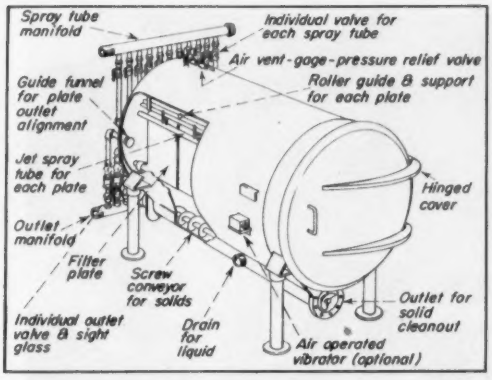
A. To efficiently operate any one filter, or all of them, in variance with incoming juice flow.

B. To restrict maximum flow per filter to any desired amount.

C. To operate any one, or all, at any constant flow rate desired.

These objectives were achieved by installing a system of air-actuated instruments which: (1) records level of incoming juice in sugar tank; and (2) transmits a control air signal, in proportion to this tank level, to air-operated flow controllers for each filter. This control may be bypassed when a filter is placed on constant flow rate.

A singularly important factor was that this control system was installed at lower initial cost, and can be oper-


Spray tube manifold
Individual valve for each spray tube
Air vent-gage-pressure relief valve
Guide funnel for plate outlet alignment
Roller guide & support for each plate
Jet spray tube for each plate
Hinged cover
Outlet manifold
Filter plate
Screw conveyor for solids
Outlet for solid cleanout
Individual outlet valve & sight glass
Drain for liquid
Air operated vibrator (optional)

HOW FILTER OPERATES: Flow of juice from manifold to each leaf is controlled by an individual valve. This makes it possible to cut single leaves out of action—no need to shut down whole unit. Guide funnels align leaf outlets with discharge pipes. Plates are cleaned with individually controlled pressure sprays (hot water at 40 psi.). Trough bottom has screw conveyor for discharging spent cake without opening filter.

NEW FILTERS SET OUTSTANDING RECORD

Averages for Five 300-Sq. Ft. Units Operating with 687-70 Brix Standard Liquor

Month	Cycles Per Filter	Length of Cycle (Hr.)	Output (Gpm.)	1,000 Gals. Per Cycle	Gal. Sq. Ft. Hr.
June	51	11.4	46.2	31	9.2
July	24	18.24	40.4	44	8.1
August	23	17.9	43.4	46	8.7
Sept.	30	19.8	41.5	49	8.3
Oct.	25	20.13	38.4	46	7.7
Nov.	11	23.13	40.7	56	8.1
Average for Imperial Season*		14.82	42.6	37	8.5
Average for Coastal Season**		20.22	41.0	49	8.2

*Beets from Imperial Valley (handled early in campaign).

**Beets from Coastal Area (handled later in campaign).

ated at lower maintenance cost, than required for a fully automated station.

When the central controller is placed on "automatic", flow to one filter varies in proportion to juice flow to the station. A constant flow rate is maintained by placing the control on "set flow". Any filter may be operated from this panel under either flow control condition. All other operations are manual (and require no unusual physical effort on the part of the operator).

Largely as a precaution to insure initial, safe operation of this important standard liquor filtration system, we assigned an operator to monitor the station.

He acts in place of the considerable additional instrumentation that would be needed for complete automation. And having him on the job obviated the initial headaches attendant on putting such a semi-automatic system into full, trouble-free operation. This precaution did not prove costly, since the operator also handles other duties.

Down to Data and Results

An average flow rate of better than 8 gal./sq. ft./hr. was maintained throughout both our operating seasons (see table). Periodic flows up to 15 gal./sq. ft./hr. were handled without noticeable sacrifice in efficiency. For, design specifications provided for sufficient reserve filter capacity at this station to permit a larger-than-average flow if required.

Cost savings came into sharp relief when we compared the economies of the new equipment with charges for the old (panel below).

During first-month operation, filter plates were changed on a schedule of two filters each shift. This accounts for the short cycle time during this month. The procedure was gradually relaxed as operators were broken-in. Thereafter, plates were changed only when they had reached operating pressure.

Before a filter is placed "on stream," its filtrate is checked at the station with clarity filter-pads. Periodic composite checks of filtering efficiency are taken every hour, using both black and white filter pads. Composite samples are also checked by our central laboratory hourly, and results are posted every 4 hr.

This system of checking perform-

Outlay Decidedly Justified

Capital outlay for newly installed filters ran $8,436 per unit, including instrumentation, piping, and extra sluice-pumps.

Comparative operating costs—old vs. new—are summarized below.

Revealed is an 80% reduction in cloth costs and a 50% cut in labor costs. per ton of beets (figured on same labor-cost basis). When combined, these results give a striking 56% slash in filtration costs.

Calculating actual savings during the past year, this investment will be retired in less than 7 yr. And rising costs and labor charges well may shorten this period.

Here, are the data on material use and costs for 1956 and 1957, filtering 68-70 brix standard liquor—

	Plate-&-Frame (1956)	New Units (1957)	Reduction	Filtering Cost, Ton of Beets 1956	1957
Cloth used.....	3,305 yd.	450 yd.	2,855 yd.	...	...
Cloth cost.....	$2,886.68	$712.71	$2,173.97	5.9 mills	1.1 mills
Labor.....	$12,821.76	$7,857.07*	$4,964.69	2.6c.	1.3c.*
Total.....	$15,708.44	$8,569.78	$7,138.66	3.2c.	1.4c.

* Converted to 1956 wage scale.

ance was set up in lieu of double filtration, or refiltering, as was formerly needed with plate-and-frames.

No difficulty has been experienced in maintaining peak efficiency, and thus far single filtration has proved very successful.

Variations in syrup flow are leveled by placing the three filters that have been in service longest on a set flow rate. The two newest filters handle the residual flow variations. This procedure did not materially shorten the filtering cycle.

Filters are sluiced at the end of a cycle with approximately 900 gal. of thin juice. The slurry—juice and filter media—is returned by gravity to first carbonation, to be removed later by our Oliver filters. Filters and lines are then rinsed with a small amount of water. Following this, drain valves to the sewer are opened and filter cloths flushed with hot water.

The latter procedure greatly facilitates keeping cloths clean and in good condition. It requires approximately 90 min. to sluice, precoat, and get a filter back on-stream.

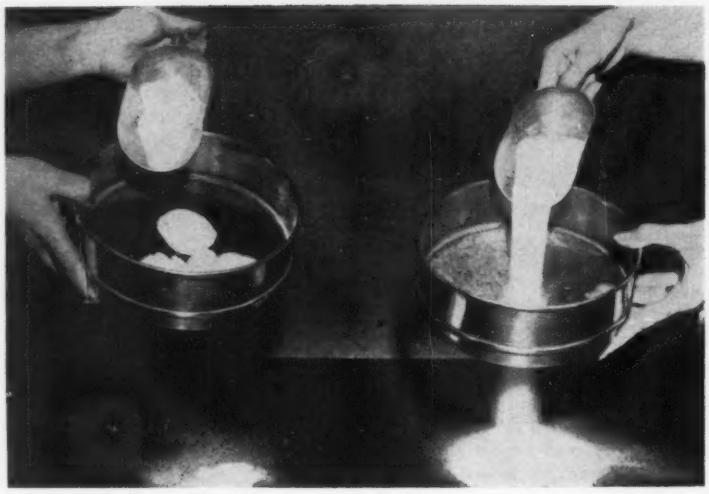
A weekly schedule of changing and washing cloths has been adopted. We maintain an extra set of leaves, dressed with "new cloth," to facilitate plate changes.

We experimented with one set of special heat-treated nylon cloths. Of the same weight and weave as the Dynel, this material provided equally good results.

Cloth life, to date, averages more than 100 days. Two and one-half complete sets of cloths were originally made up. But following 185 operating days, one and one-half sets remain for further use.

Wire-mesh screen (60 x 60-square mesh, stainless, wire-backing screen) were tested during the Imperial season in one filter. But since we precoat with Solka-Floc mixed with filter aid, this unit had to be operated at a constant flow rate to prevent loss of cake. No difficulties due to blinding were encountered during the period (approx. 60 days) that the screens were used. This probably was due to use of the free-flowing type plates.

Brief of suppliers: RSC filter, *Sparkler Mfg. Co.*, Mundelein, Ill.; Dynel cloth Style 901F, *U. S. Rubber Co.*; Solka-Floc, *The Brown Co.*, Berlin, N. H.; Filter aid #503, *Johns-Manville Corp.*; instruments, *Taylor Instrument Cos.*; pumps, *Worthington Corp.*; valves, *Lunkenheimer*. —*End*



FREE-FLOWING property of new meat cure containing silica gel is demonstrated (right) by its rapid passage through screen. Of even greater importance, silica gel prevents oxidation of cure's sodium nitrite, thus insuring its full potency.

Cure That Cures Instability

Meat-treating formulation's silica gel guards against nitrite oxidation, assures uniform color . . . Approved by MIB

STABILIZED with ½% silica gel, a new free-flowing meat cure offers packers uniform curing and color development with either liquid or dry formulations.

Silica gel is a powerful dehydrating agent recently approved by the Meat Inspection Bureau for use in curing compounds.

As for proof in use, Blue Bird Food Products Co., a Philadelphia packer, reports success in using this cure in hams and picnics.

According to H. Cook, company president, the stable product has contributed directly to steadily increasing sales by enabling uniform curing and consistent color development.

In addition, the free-flowing cure saves preparation time and labor. There are no lumps to break up. This was a time-consuming job, but necessary to insure complete dissolving of the cure.

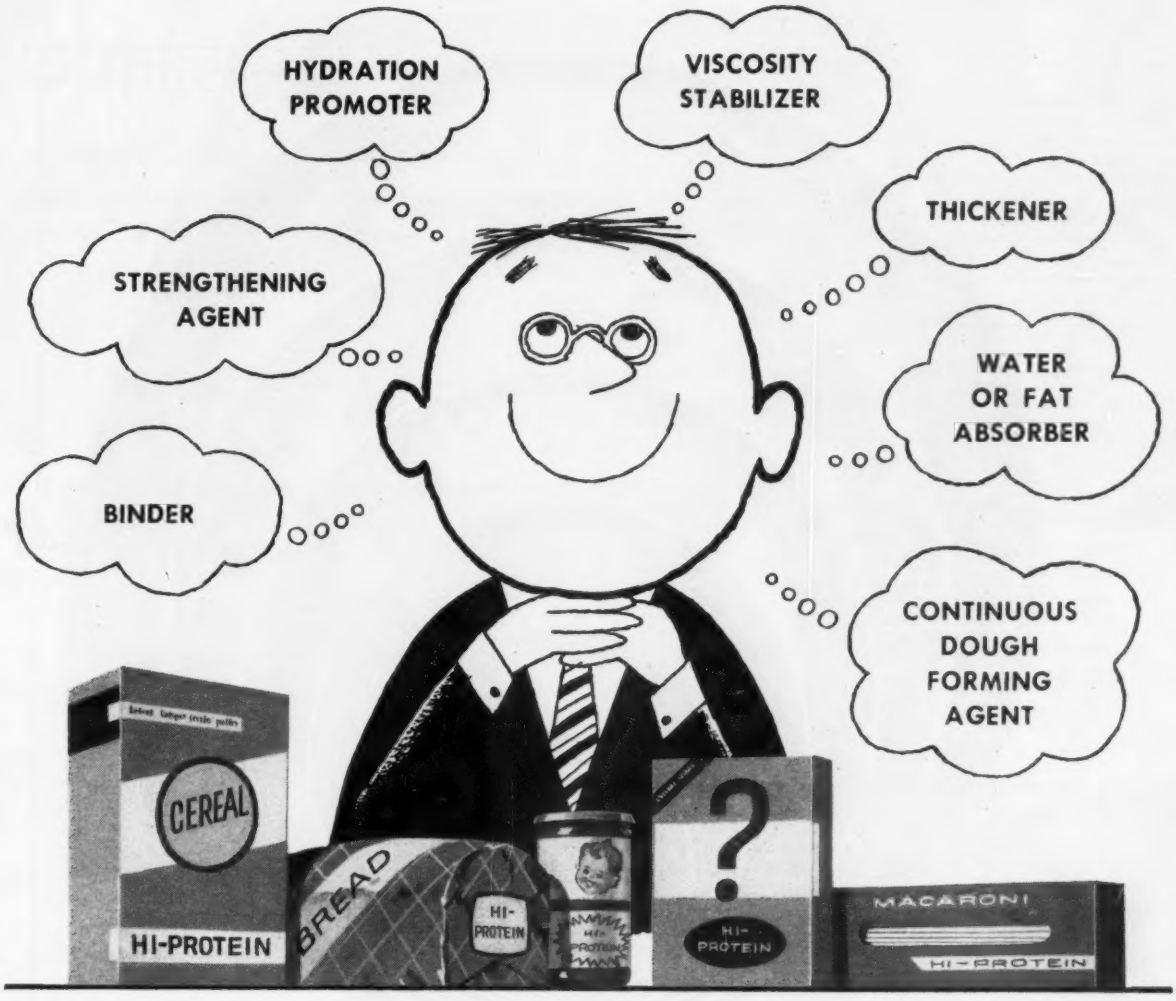
Formerly, unstable meat cures had been a particular problem to packers, according to Baltimore Spice Co., maker of the patented product (Westphalia). The difficulty was traced to the inherent instability of sodium nitrite, an active cure ingredient. On storage, it gradually is oxidized to sodium nitrate, and this oxidation is accelerated in the presence of moisture.

Nitrate in a curing brine or pickle is ineffective in 'fixing' color until nitrate-reducing bacteria convert it to nitrite. Since with unstable cures packers could not be certain of the actual nitrite-nitrate balance at time of use, process time and color development were subject to considerable variation.

Silica gel is stated to take the guesswork out of the curing process by coating and dehydrating the individual cure particles. Moreover, it continues to absorb moisture even after the cure is exposed to air.

As a result, the powdered product remains free-flowing and readily dissolves in water or brine. Used in a dry formulation, it spreads evenly in the chopper, eliminating the possibility of under- and over-curing.

Except for addition of silica gel, the cure is a standard type containing salt, sodium nitrite, sodium nitrate, sugar, and dextrose. Nitrite content is 6%.—*FE Staff*



PRO-80 gives you all these processing benefits ...plus 80% wheat protein for food enrichment

PROCESSING BENEFITS

Thickening, strengthening, binding and other functions of Pro-80 Vital Gluten give you numerous opportunities to overcome production problems—or, to create entirely new food products and improve existing ones.

PROTEIN ENRICHMENT

As a low cost source of concentrated protein, Pro-80 is ideal for enrichment of numerous foods. And, with shoppers becoming increasingly conscious of health and diet, protein enrichment is more of a sales stimulant than ever.

PRO-80 PROVED IN MANY FIELDS

Some processors already have found profitable uses for Pro-80 in:

- breads
- macaroni products
- cereals
- dog food
- health foods
- baby foods
- baked foods
- many others

Its potential merits investigation in many other food fields.

PRO-80 IS 80% PROTEIN Pro-80 Vital Gluten (80% pure wheat protein on a moisture-free basis) blends smoothly, hydrates rapidly, is bland and compatible —adds no taste or odor of its own. Packed in 100-lb. multi-wall paper bags.

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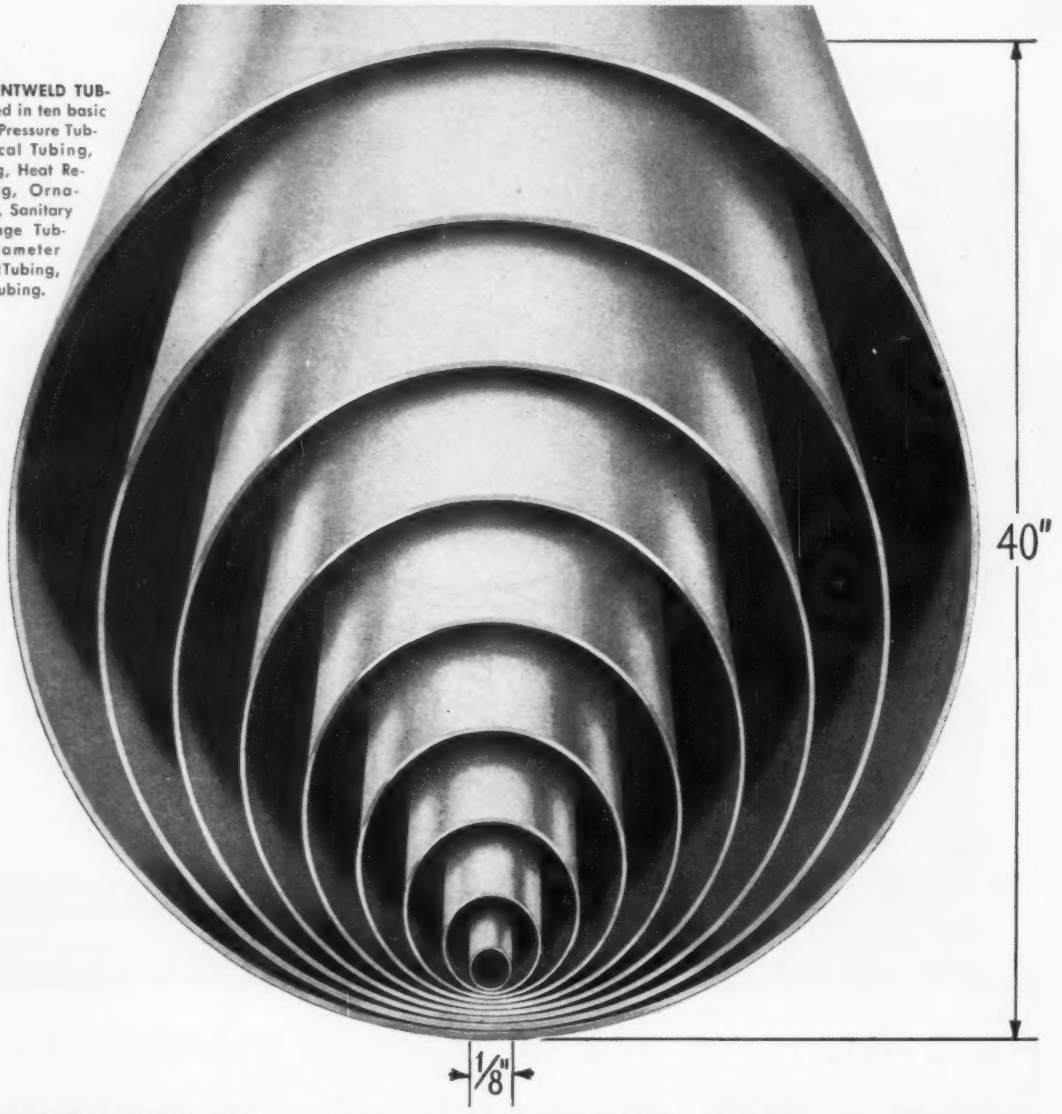
For more data, circle this page number on card at back →

CONTOUR TRENTWELD TUBING is furnished in ten basic classifications: Pressure Tubing, Mechanical Tubing, Aircraft Tubing, Heat Resistant Tubing, Ornamental Tubing, Sanitary Tubing, Beverage Tubing, Large Diameter Tubing, Shaped Tubing, and Formed Tubing.



TRENTWELD tubing is equal in strength and has more uniformity than tubing made by any other method of manufacture

Trent offers tubing in sizes ranging from ⅛" to 40" O.D. and in a wide range of grades. These include: Hastelloy,* Zirconium, Zircaloy, Titanium and 19-9-DL grades. All are made by an exclusive welding process—Contour Trentweld®—which virtually eliminates the bead. Furthermore, by cold working and annealing after welding, Trent makes the weld equal in strength and corrosion resistance to the parent metal.

To insure that Trentweld tubing is of the highest quality attainable, a rigorous quality control program is carried out. Samples of each lot are tensile tested. Periodic tests — flattening, reverse bend, flare and flange, coil, and pressure — are conducted. Rigid corrosion tests are made on all lots intended for corrosive applications. When requested, a unique "single-wall" X-ray inspection is made as your final assurance of a sound, uniform product.

Why not take advantage of Trent *quality* when you order stainless or high alloy tubing? For further information, write for the Trent tubing handbook, Trent Tube Company, East Troy, Wisconsin.

*Trademark of Haynes, Stellite Co.

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TRENT TUBE COMPANY

Subsidiary of Crucible Steel Company of America

GENERAL OFFICES: EAST TROY, WISCONSIN
MILLS: EAST TROY, WIS.; FULLERTON, CALIF.

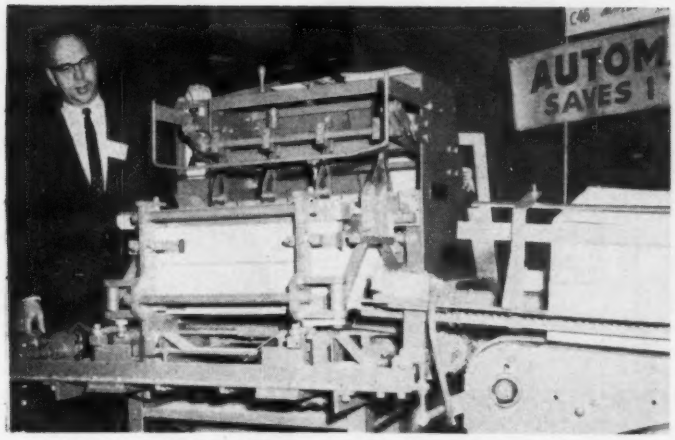
← For more data, circle this page number on card at back

Display New Machines

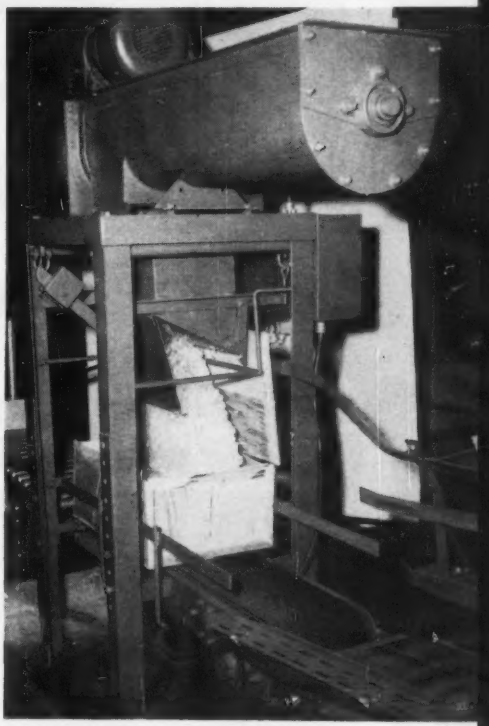
Spotlight's on advanced packaging systems, latest refrigeration units, egg breaker-separator, and blood detector. Scene is Kansas City show of Institute of American Poultry Industries

4 PACKAGING SYSTEMS

SELF-MOLDING, biaxially oriented polyethylene forms neat, close-fitting package—and without heat—for (A) tray-packed, cut-up poultry; or (B) whole bird, using air-powered stuffing horn.—Continental Can Co., Shelmar-Betner Div., Mt. Vernon, O. (117A)



AUTOMATIC WIREBOUND CLOSER handles 900 units per hour. Packed containers are fed into machine that squares and ejects them after wire loops are straightened, threaded, and fastened.—Stapling Machine Co., Rockaway, N. J. (117B)



ICE PACKER'S worm-screw feed takes ice from ice-making machine to 50-lb. hopper. Here it's weighed to pre-set amount by electronic scale and discharged into conveyed wirebound or similar containers.—Engineered Sales Co., Winter Park, Fla. (117D)

NEW HEAT-SHRINKABLE MYLAR for whole birds or tray-packed, cut-up poultry provides exceptional strength, protective properties, and brilliant clarity. Birds are packed into bags, which are evacuated and sealed (A) and then hot-water dipped (B) to provide snug fitting seal.—E. I. Du Pont de Nemours & Co., Inc., Wilmington, Del. (117C)

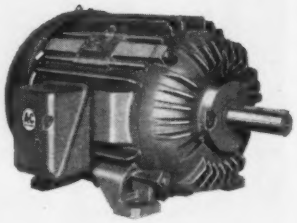
Continued →

long-run power by Allis-Chalmers

Newly applied food process uses Allis-Chalmers motors

For better milling, here's a separation process to produce individual flours for specific bakery products. It's done by turbo-milling, developed by Pillsbury Mills. Allis-Chalmers motors furnish power for the turbo-grinders and separators which produce hurricane winds required for this reduction process.

Turbo-milling is only one of many long-run milling operations for which Allis-Chalmers motors have been selected to handle day-in, day-out performance requirements. What contributes to the long-run power in Allis-Chalmers motors? MORE stator protection; MORE use of iron; MORE cooling surface.

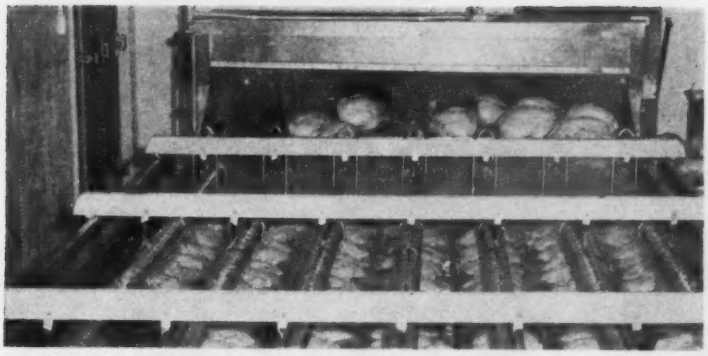


For the long run, specify Allis-Chalmers motors as new components or as replacements. Contact your A-C representative or distributor, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wis.

ALLIS-CHALMERS

A-5577

4 REFRIGERATION UNITS

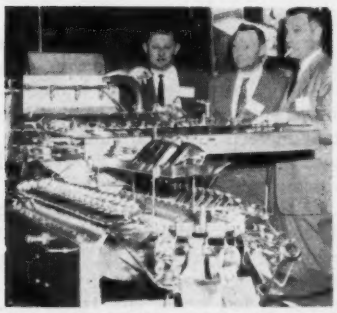


LIQUID FREEZER consists of 6-8 flumes (brine) to handle 100,000 lb. of turkeys per 8-hr. shift. Wire-mesh discharge belt, with variable-speed drive, controls flow (30-45 min.) of "breast-down" birds through freezer. Unit is also equipped with overhead brine sprays. A 5-hp. pump circulates brine at 500 gpm.—Louis A. Roser Co., Salt Lake City, Utah. (118A)

FLASH COOLER continuously chills 1,500 birds an hour. They're tumbled in series of 18-ft. rotary drums, getting ice-water coolings in each.—Gordon Johnson Co., Kansas City, Mo. (118B)

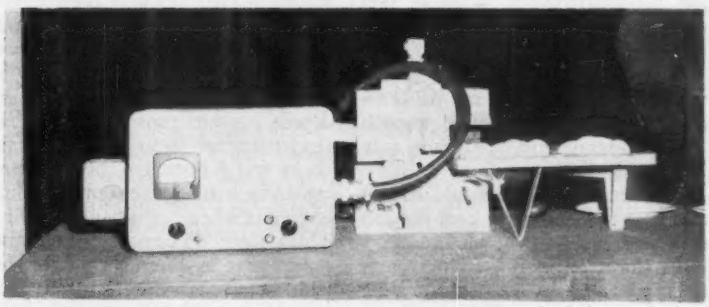
SHELL-ICE PRODUCER has 4 stainless tubes, cooled to low temp by NH_3. Water freezes on tubes, and after desired ice-thickness is obtained, shot of warm refrigerant releases ice, which drops and passes through breaker.—Frick Co., Waynesboro, Pa. (118C)

IMMERSION FREEZER uses propylene glycol, recirculated at 600-gpm., to handle 500-1,000 turkeys per hr. (number depends on length). Birds are completely or partially frozen. In latter case, freezing is completed in freezer storage. Turkeys ride through sprayed refrigerant on chain-driven variable-speed slatted belt.—Gordon Johnson Co., Kansas City, Mo. (118D)



BREAKER-SEPARATOR for eggs handles up to 18 cases per hr. Unit is readily adjusted to take eggs from pullet- to jumbo-sizes for 85-95% clean separation of yolks and whites.—Seymour Foods, Inc., Chicago. (118E)

EGG SEPARATOR, DETECTOR



ELECTRONIC UNIT detects blood in eggs at rate of 20 cases per hr. Incorporated are special optical system, electronic amplifier, and electro-mechanical reject mechanism.—Food Systems, Inc., Oakland, Calif. (118F)

Circle key numbers on Reader Service Card

Pre-tenderized product . . .

There's top appeal in uniformly portioned tenderized steaks that Armour now markets to institutional trade. Packages are blast-frozen within 2 hr. to check enzyme action.

Quick Tenderizing Poses

Striking possibilities are seen for enzyme-treated low-cost beef . . . Would open door to 'hot' markets offering tremendous potential . . . What packers are doing, and the hurdles faced

IS THE LOW-COST tender beef cut "about to hit"? — Meat that doesn't need the present costly, time-taking processing?

Without question, such a product would prove a natural for packers—assuring broad new selling impact. The consumer and restaurant markets would "eat it up."

Further, the effects would be felt all along the line, with beef producers also figuring in the picture.

In truth, an early tomorrow may find advances in enzyme-treating techniques bringing this about.

JOHN V. ZIEMBA
Associate Editor, "Food Engineering"

Three prior factors have smoothed the path: First, it's long been known that certain proteolytic enzymes will quickly tenderize inexpensive beef cuts, "upgrading" their texture, flavor, and juiciness. Second, the last decade has seen considerable kitchen tenderizing of meats by restaurant cooks and housewives, using a conveniently marketed enzyme product (Adolphs, Ltd., Burbank, Calif.). Third, since '55 commercial enzyme-tenderizing by the meat packers has had the O.K. of the Federal meat inspection service.

Today, packers are consuming over 20,000 gal. of enzyme tenderizers per month, says Glenn H. Freeman, packinghouse sales manager out at Adolphs. However, of the $10 million enzyme sales in '57, over two-thirds still went to housewives.

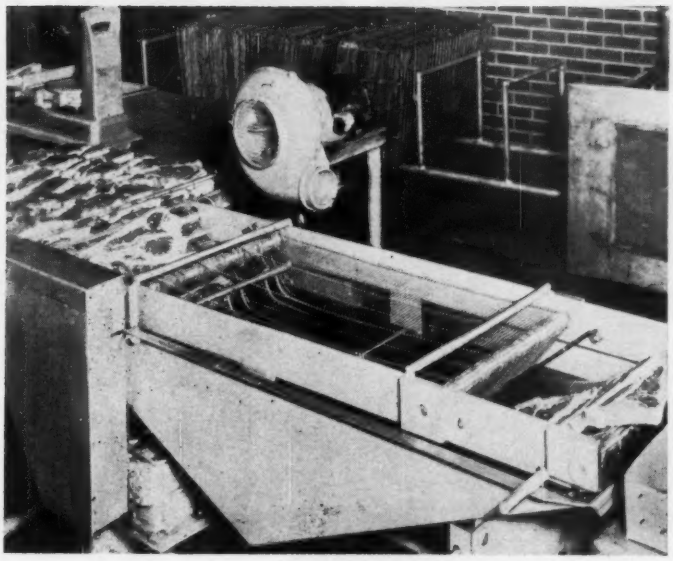
This indicates the exciting potential in the packer field, where use of enzymes is already on the rise.

Just how far tenderizing will go is as yet hard to gage. But the trend certainly bids fair to bring significant changes.

Producers and feeders might search for fast-growing cattle, paying less attention to type, color, or body conformation. Animals would then be kept in feed lots for a shorter time, with more emphasis on growth and less on fattening.

When cutting and tenderizing steaks at packinghouse level, packers could then abolish the old time-aging stage, reduce large inventory costs, and ship less bones and trimmings. They'd be able to sell more meats and get a greater profit return for their efforts.

Steaks were first selected for enzyme-tenderizing, because their uniform thickness assures better con-



. . . and its enzyme treatment

A 45-sec. dip does the trick—selected steaks being mesh-belt conveyed through a treating tank. Commercial solution used contains salt, MSG, sugar, and papain (the active enzyme agent).

Challenge to Packers

trol of enzyme action. The thicker roasts are as yet too tricky to handle.

Using lower grade meats, packers stand to make more acceptable, economically priced tender cuts available without going through the costly, time-consuming aging process, according to General Manager Del Love of Armour and Company's frosted meat division.

However, there'd not be enough refrigerated space in packinghouses, he says, for conventional aging (regardless of beef grade) if the steak-enzyming trend rocketed at packinghouse level. For such steaks could not be packed "green"—right out of cooler and into freezer.

Further, he feels that enzyme treatment might even be extended to choice grades—instead of being restricted to lean, inexpensive cuts.

Already noted by Mr. Love is a significant rise in the use by food service operators of frozen, enzyme-treated steaks. More restaurants, like the drive-ins, are popping up to compete with these meats against the $3.00-$6.00 steak dinners (choice aged beef). They do it with $1.00-$1.50 complete dinners.

What's more, these operators are availed the convenience of using portion-controlled steaks without going to the trouble of enzyme-tenderizing themselves.

Armour introduced a new line of these low-cost steaks, marketed under Banquet and Melrose brands, about 2 yr. ago. Selected in five plants from the better lower-grade primal cuts, these meats are cut into uniform thicknesses by electric band saws, trimmed, and portion-sized.

Meat texture, flavor, and juiciness are improved as these steak cuts are conveyed, by wire-mesh belt, through a Greer tank containing 5-gal. of tenderizing solution with the proteolytic enzyme papain (from Papaya fruit), hydrolized plant protein (to control enzyme activity), and sugar.

Following tenderizing, steaks are drained, individually wrapped in cellophane or other suitable plastic film, flash-frozen well below 0F., and packed in 10-lb. telescopic-style cartons for freezer storage.

And quality control doesn't stop here. Zero temperatures must be maintained during distribution.

Banquet brand cuts consist of T-bone, top sirloin, boneless sirloin strip, and dinner steaks. The Melrose line comprises T-bone, boneless rib club, and butterfly boneless sirloin strip steaks. Cuts range upward from 4 oz. in the boneless rib club and from 12 oz. in the T-bone.

Prime illustration on the price front: The boneless sirloin strip steaks are sold by Armour for about 95c.—whereas the same cut from choice aged beef runs around $2.15.

Armour is now weighing the idea of home-freezer packs, each containing six portion-sized, enzyme-treated strip steaks. Several different varieties can be offered.

Meat houses also are looking into the possibilities of a consumer pack. One firm's recent midwest introduction of such an item met with good first-purchase interest, but not repeat sales. Major problem was that these steaks posed a need of better quality control. They were either too tender, quite tender and tasty, somewhat tough, or off as regards flavor.

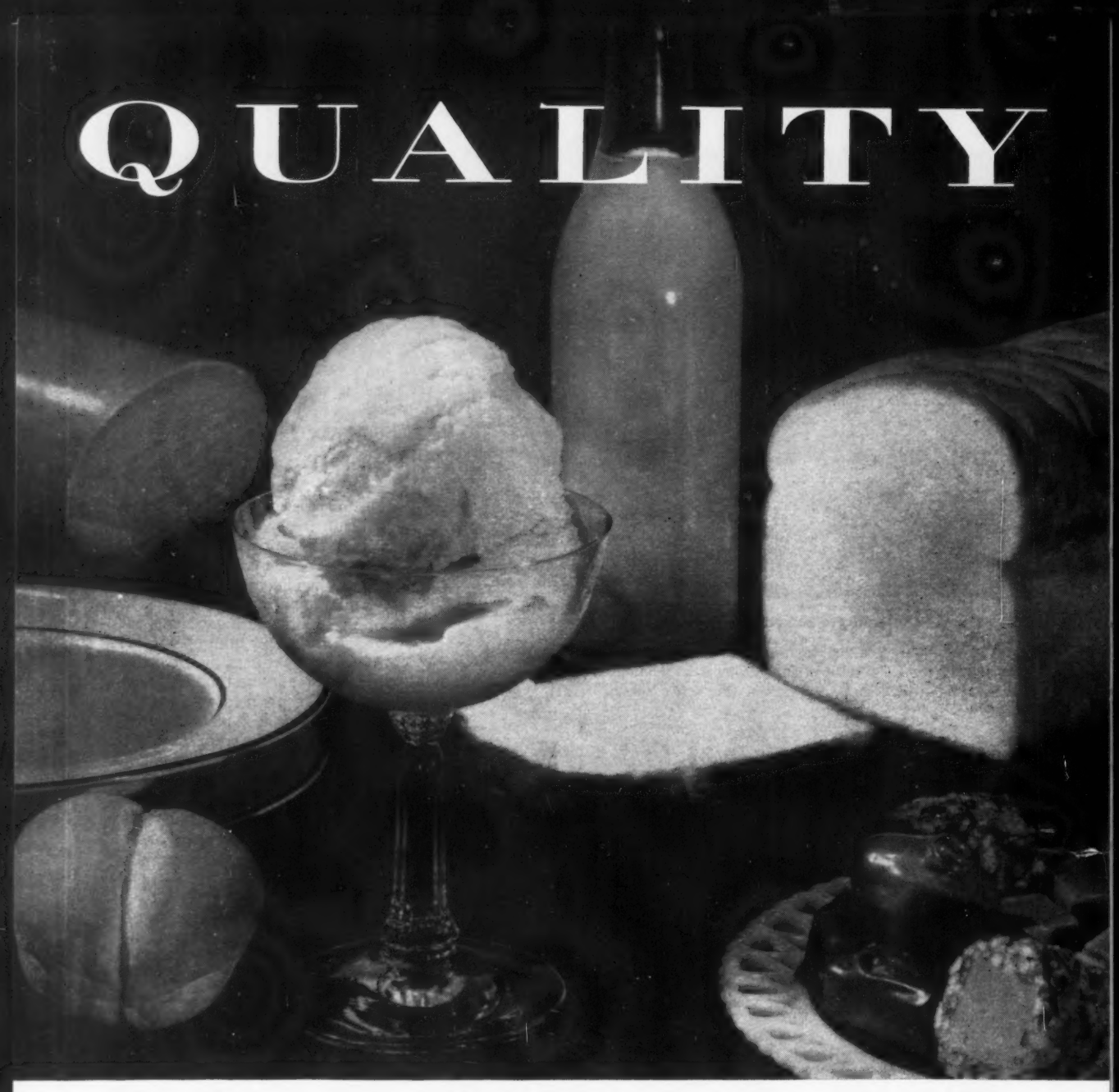
Enzyme-tenderized packs may take some time to make a really worthy showing in the consumer market, since so far the housewife is only gradually accepting frozen meats (roughly 3% of the meats produced are frozen).

But the fact that she has no clear-cut knowledge of beef quality (according to surveys) may help to expedite her acceptance of tenderized frozen steaks. She's now willing to sacrifice quality by purchasing leaner, cheaper commercial beef that has less fat than U. S. choice. And it's the low-cost, lean, tougher cut—even from utility grade cows—that packers would enzyme-tenderize.

"Once We Learn. . . ."

"Tenderizing won't really upgrade beef," says C. K. Wiesman, Armour's general manager of quality control—and food research. "It won't make a good, choice, or prime grade out of commercial or utility beef. And present treatment is limited to meats that are frozen—checking action of the tenderizer.

"But once we learn how to use these enzymes for meats to be sold fresh and convince MID (Meat Inspection Div. of USDA)—then ter-



The superior dairy ingredient that improves quality and reduces cost

Spray-process Sweet Dairy Whey gives you 50% more milk sugar, 50% more albumin protein, and more milk minerals too. Add them all up and you've got more mouth-watering taste, more eye-catching color and a more uniform consistency in all of your products. Best of all...you can easily save up to 40% on dairy ingredient costs.

Western's Sweet Dairy Whey is completely quality controlled from laboratory to production. It meets or exceeds U. S. Extra Grade standards in every respect. Try this pure dairy ingredient today and see how it can improve *your* profit picture.

For complete information and a working sample, please write our Technical Service Department 16D.

Here are a few of the products improved by Sweet Dairy Whey:

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- Candy
- Soft Drinks
- Creamed Foods
- Soups
- Prepared Mixes
- Frozen Desserts
- Meats

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Valley Fresh Sweet Dairy Whey

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rific opportunities will open up for the livestock and meat-packing people."

What do we know, thus far, about the action of these tenderizers?

American Meat Institute Foundation's Harry Wang and Marion Birkner proved that all proteolytic enzymes don't perform the same way on meats. Some work more on connective tissue (elastin constituent), others attack only muscle fibers, and still others act strongly on both connective tissue and fibers.

They also learned that salt and certain protein preparations modify the action of some enzymes.

Actually, taste panels have been able to detect enzyme-tenderizing effects before major meat changes showed up under the microscope.

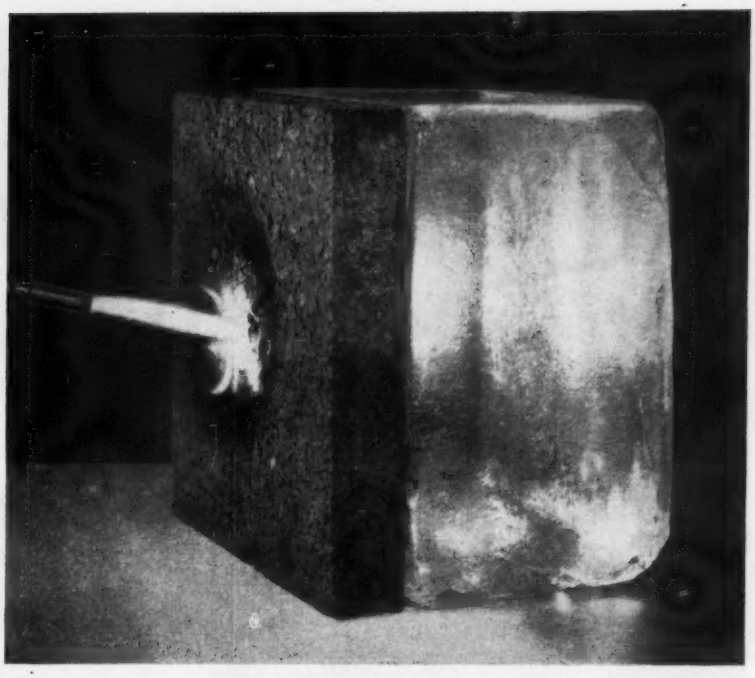
Requisite are further studies on enzyme penetration, reaction uniformity, and flavor effects.

Enzymes already looked into are derived (1) from botanical sources, as papain, bromelin (pineapple plant), and ficin (figs); (2) from fermentations, as Rhozyme P-11 (Rohm & Haas Co.); (3) from the hog pancreas, as trypsin and viokase, and (4) from plant-fungal sources, as Tendrin, combining the vegetable proteolytic enzyme bromelin and a fungal protease (Takamine Lab).

Researches also are being focused on treatments of meat by injecting and uniformly blood-circulating enzymes (live and slaughtered animals). Furthermore, experiments with these techniques are not limited to enzyme tenderizing.

Test samples of beef (out of 32-36F. coolers) have been age-tenderized with short period high-temperature treatments, using antibiotics, radiation (gamma rays), or both, to check bacterial spoilage. These specific methods, of course, are not Government approved. —*End*

"It's a revolutionary convenience concept — you don't have to add water!"



Why United's patented process results in corkboard of higher insulating value

Cork in its natural state is well known and highly regarded as an excellent insulating material. However, by an exclusive blocked-baked patented process that combines *both* external and internal heat in the moulding operation, United BB Corkboard is unsurpassed in insulating value.

Further, United Corkboard is 100% cork . . . with no filler added, and, its high strength in relation to light weight permits a sturdy self-supporting structure that is simple to erect. It's flexible too . . . fits accurately, works as easily as lumber and the natural resins released during processing further add to its excellent moisture resistant characteristics.

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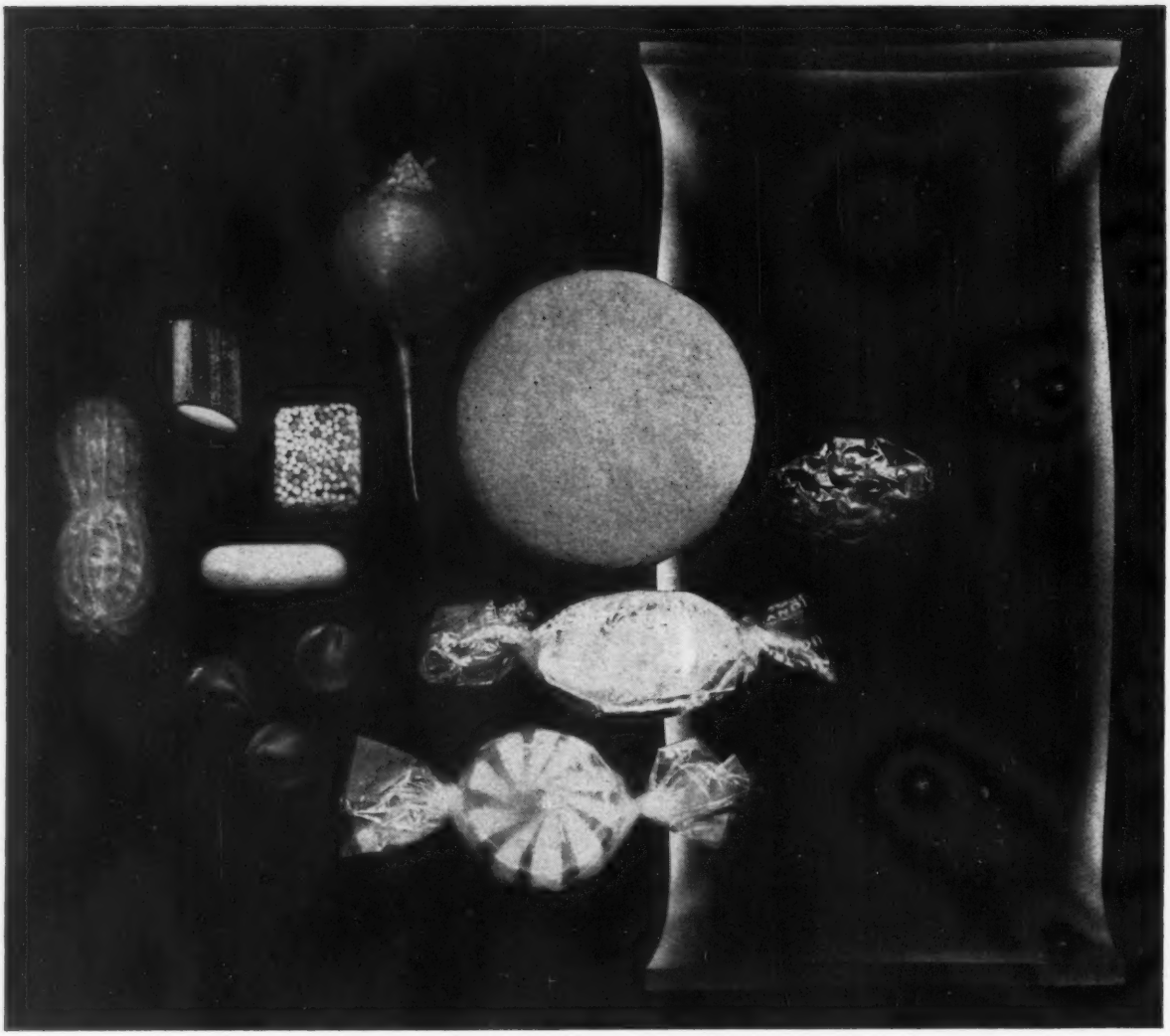

Cantilever Scales On PACKAGE Transwrap

HOLDS ACCURATE ADJUSTMENTS

Now, to improve completely automatic packaging operations on the Package Transwrap, an entirely new scale gives you the most accurate, trouble-free weighing available anywhere. This Model PS Scale has been designed with cantilever action. There are no balances or knife edges to get out of adjustment. Electronic sensing and elimination of bouncing with the cantilever design make the Model PS more accurate than other types of scales.

In addition, the Model B Transwrap will now handle polyethylene film, gives you bag widths up to six inches. An improved, simplified impulse sealing mechanism with cold-wire cut-off insures tight seams. Its new design provides material savings by making a ⅛" wide seal at both ends of the bag and a clean cut-off.

You can get details on the new Model PS Scale, and the improved Model B Transwrap, by contacting your Package representative. He can show you how Transwrap's completely automatic operation will improve your packaging and cut your costs.

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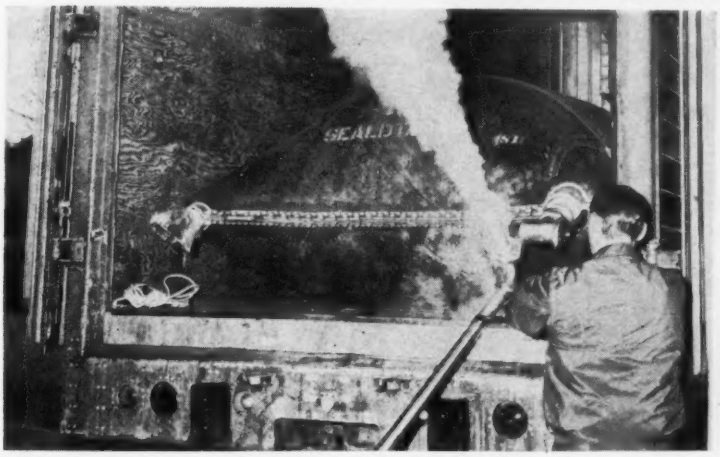

CHEAPER WAY to bulk-haul milk (and other liquids) employs this 2,500-gal. rubber tube carried by regular motor freight. For milk, it saves about 20% over contract hauling by tanker. Before unloading the bag by pump, piping and valve are steam-sterilized.

FOR RETURN TRIP, 600-lb. bag rolls into compact bundle. Thus, trailer can take dry cargo.

Enabling two-way transport of bulk liquids and solids in the same carrier, this roll-up tube . . .

Saves 20% on Liquid-Hauling Cost

LOWER-COST HAULING of bulk milk is the first food use of the giant sausage-shaped tube pictured above.

Recently introduced unit (FE Dec. '57, p. 156) is made of rubber and rayon cord, like a tire, and is lined with polyethylene. Mounted in an ordinary motor-freight carrier, it's making regular deliveries (2,500 gal.) to Mayflower Milk Co.'s plant in Portland, Ore.

Cost of the 200-mi. milk run is 31c. per cwt.—about 20% less than for contract hauling in conventional bulk tankers.

This saving results from the bag's roll-up feature, which permits transport of liquids outgoing, and dry cargo on the return trip of the same trailer.

The system was introduced by Consolidated Freightways, Portland, in cooperation with Mayflower, Oregon and Portland milk-inspection departments, United States Rubber Co. (maker of tube), and Oregon State College.

In operation, standard dairy equipment is used for filling and emptying the bag. It is cleaned by pumping in cold water, then alkali solution, and finally rinsing with water.

Unit is 22½ ft. long, weighs only 600 lb. when empty, and can be rolled into a compact bundle for the return trip. Clamped at both ends, it has stainless valves and fitting. Tube costs $1,420; the liner, $6.50.

Ordinarily, trailer refrigeration is not necessary because milk is shipped at 36F. and the bag is a good insulator. However, a reefer would be used for a long haul in hot climate.

—*End*

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—says KILPATRICK'S BAKERY
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"We have been using a LUBRIPLATE Lubricant as an all-purpose grease for over four years. Bearing trouble was eliminated even where we had excessive heat conditions, and our bearing replacements were cut to a minimum. In all my experience as an engineer, I have never used a lubricant that gave the excellent results accomplished with LUBRIPLATE."

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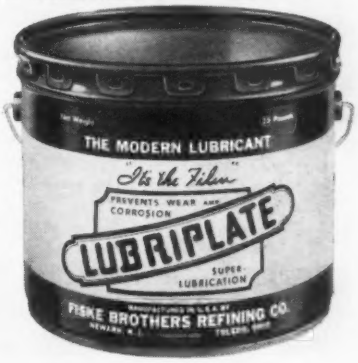

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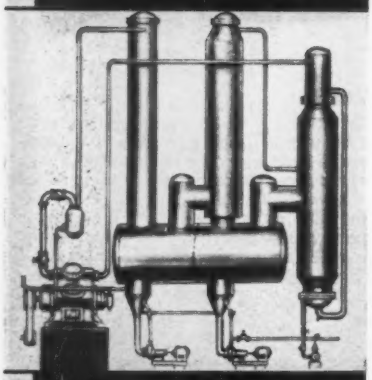

▶ no boiler required.
▶ uses negligible amount of condensing water.
▶ no sewage disposal problem.
▶ less operating attention. adds up to lowest *concentrating cost!*

Typical applications include:
• Chicken Broth • Beef Broth
• Oyster Broth • Citrus Juices
• Whole and Skim Milk • Fruit Juices

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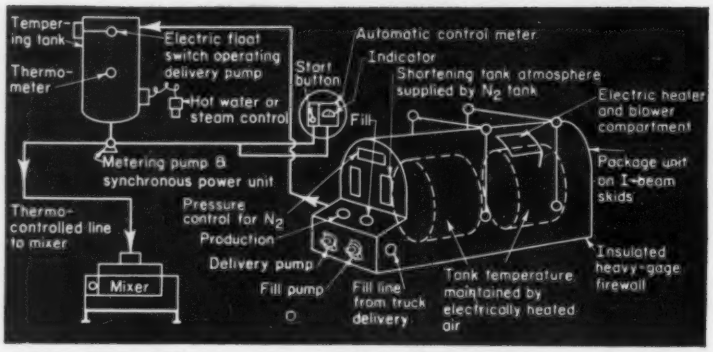

THIS ADVANCED bulk-shortening setup is designed for improved storing and dispensing performance (see item "Packaged Shortening Unit" below).

Innovations in Baking

New methods, processing ideas, and plant tips highlighted at Bakery Engineers convention—

Rise in Flour Air-Classifying

Bakers will see much more air-classifying of fractions from milled flours.

Millers thus stand to gain through more efficient utilization of wheat. And bakers will be assured of improved flour uniformity. For air-classified flours don't contain sizable amounts of materials unfavorable to the making of specific products.

Examples: Conventional flour intended for bread may contain as much as 30% undesirable cake flour. Conversely, a cake flour may have as much as 40% bread flour. Air-classifying grades out these unwanted portions.

—*Frank W. Wichser*
Pillsbury Mills, Inc., Minneapolis

"Packaged" Shortening Unit

Efficient handling of bulk lard and shortening can be a prime factor in winning optimum performance.

Notable here is a new system—see drawing above—that involves bulk deliveries of shortening and lard to an automatically controlled "package" unit. This consists of two insulated, enclosed, plastic-coated storage tanks, each holding 4,000 gal., and a thermostatically controlled, circulating-type blower-heater to keep fats liquid and pumpable.

To check oxidative rancidity, nitrogen-blanketing is automatically achieved as tanks are emptied. Nitrogen also purges tanks of residues.

A 30-gpm. sanitary pump then delivers 110F. lard or 120-to-130F. shortening through a specially designed heat-tracer type aluminum pipeline (aluminum heating element inside non-insulated pipeline) to an agitator-equipped tempering tank (60-80 gal.) adjacent to mixer.

A copper-free metering pump, equipped with synchronous drive, is fitted directly below tempering tank. Controlled by pushbutton pre-selector switch, it automatically proportions pre-set amounts of shortening delivered from tank to mixers.

—*Earl G. Spangler*
Liquimatic Systems, Inc., Los Angeles

Emulsifying Skips Tempering

Through using emulsifiers—mono- and diglycerides, as well as sorbitan esters—bakers can now make cakes with any type shortening, and even salad oils.

This is significant because of the trend toward bulk handling of shortening and continuous batter mixing.

With emulsifiers there's no need to temper the shortenings in order to produce aerated batters that yield good-volume cakes.

—*Henry H. Favor*
Vanderbilt Co., New York City

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"'Quality First"

Sweet-goods bakers are too involved competing among themselves. They should, instead, focus attention on producing a larger volume of richer, better-quality goods in wider varieties—for more competition with other industry branches.

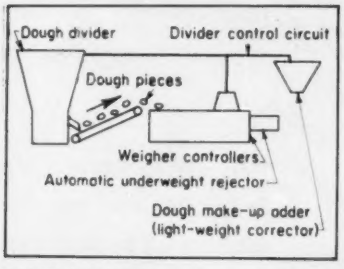
Products must not be formulated merely to meet price. Rather, emphasis should be directed first to quality factors, with subsequent tailoring of items to size for desired pricing.

—*LeConie Stiles, Jr.*
Ruth Ashbrook Bakeries, Inc., Seattle

For Precise Dough Scaling

Automatic and accurate control of scale-weighing from conventional dough dividers is vital. For overweight items mean serious profit inroads.

Specifically testifying to the gravity of such 'give-aways' is a recent survey of 210 large bakeries—revealing that almost two-thirds of them over-



'GIVE-AWAYS' are seen curbed with this dough-weight control system.

scaled loaves ½ oz. This indicates that bakers doled away some $10,000,000 in bread overweights last year.

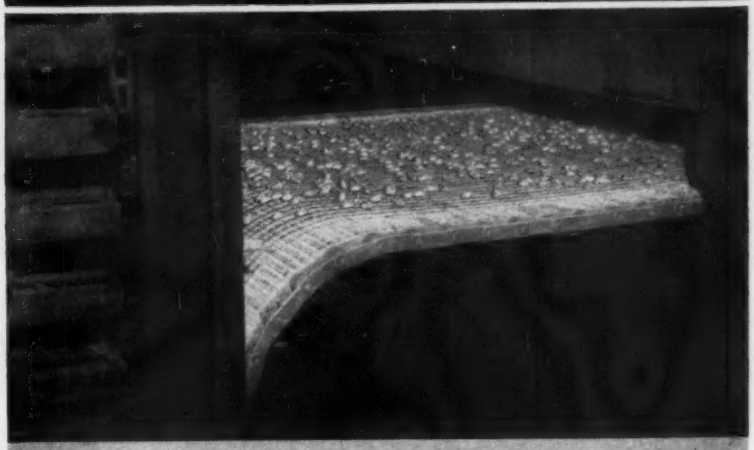
This directs attention to a proposed method (accompanying drawing) for automatically weighing pieces of dough at a 160-per-min. rate, with precision control, plus rejection of underweights.

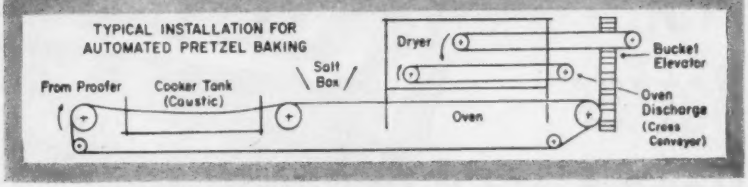
Included would be an auxiliary divider. This would turn out dough for making up any weight deficiencies.

Called "a weigher-controller and reject unit with weight corrector," new system is especially aimed at saving scaling time and eliminating excessive labor, while generally augmenting line efficiency.

—*John A. Abbott*
Food Machinery & Chemical Corp., San Jose, Calif.

Cambridge WIRE MESH BELTS





METAL-MESH BELT CONTROLS PRODUCT UNIFORMITY IN CONTINUOUS BAKING

Every day, millions of tiny pretzels pour from Cambridge Wire Mesh belts onto packing tables—each as uniformly baked and tasty as the next because oven heat flows *through* the belt and around the product. And, clean, sanitary Cambridge Belts can't destroy flavor or contaminate foods because they can't rust, rot or absorb odors.

In other food operations, too, such as washing, freezing or packaging, Cambridge Belts help increase production and cut operating costs. Here's how:

CONTINUOUSLY MOVING BELTS ELIMINATE BATCH PROCESSING—give faster, more economical processing; reduce slow, costly manual handling.

OPEN MESH PROVIDES FREE AIR, LIQUID CIRCULATION—foods are baked, blanched or frozen quicker; wash solutions, dirt and grit drain through belt in a flash.

ALL-METAL CONSTRUCTION IS HEATPROOF, COLDPROOF, RUSTPROOF—Cambridge belts can be woven from any metal or alloy to take up to 2100° F. or sub-zero temperatures.

SPECIAL SURFACE ATTACHMENTS AVAILABLE—raised edges or cross flights hold product on belt during movement.

Talk to your Cambridge Field Engineer soon—he'll explain the many advantages of continuous food processing on Cambridge Wire Mesh belts. He'll recommend the belt size, mesh or weave—and the metal or alloy—best suited to your operations. You'll find his name in the classified phone book under "BELTING, MECHANICAL". Or, write for FREE 130-PAGE REFERENCE MANUAL giving mesh specifications, design information and metallurgical data.

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for Better Conditioned, Finer Flavored Foods

OK DRI-SWEET 42 D.E. (GRANULATED) is especially suitable for seasoning comminuted luncheon meats, smoked, cured and preserved meats. It is colorless, reduces watering off, cuts shrinkage, improves texture, is a better binding agent and can be used in greater quantity for maximum fill.

But, whether you produce prepared meat products, dry food mixes, frozen foods, ice creams, soup mixes . . . if you want finer flavor, better texture, controlled moisture, increased solids, and improved shelf life . . . *if you want quality at no extra cost* . . . you can get it with the OK BRAND DRI-SWEET Corn Syrup Solids. In fact, *only* OK DRI-SWEET Corn Syrup Solids provide a combination of *so many advantages in a single conditioner-seasoner.*

Write today for detailed data on how OK DRI-SWEET Corn Syrup Solids can help you improve your production, or phone for a Hubinger Food Products Technician. You'll find him and the Hubinger Customer Research Service OK too.

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Taste Tests of Tomato Juice

Contrary to previous assumptions based on other products, recent flavor preference evaluations of tomato juice, by students at Oregon State College, revealed that—

1. Rinsing the mouth with tap water between samples has no effect on accuracy of tests.
2. Swallowing product increases accuracy of results, and
3. A larger quantity (1½ oz.) consumed produces truer results.—*Food Tech.*, 1-4, Jan. 1958.

Lactic Bateria Growth Sped By Additives

Trace amounts of antibiotics in milk from animals that have received antibiotic therapy can interfere with production of cultured milk products by sensitive strains of *Streptococcus lactis*. But certain strains have been developed that are resistant to oxytetrocycline.

Tests of metabolic behavior of sensitive and resistant strains of *S. lactis* 10A showed that there was a marked difference in the phosphorus metabolism of the resistant strain. It does not take up phosphates at the normal rate.

As a result the rate of synthesis of sugar phosphates is reduced to a point where lactic acid formation is also slowed down. Addition of glucose-1-phosphate or fructose-1,6-diphosphate greatly accelerates production of lactic acid by the resistant strains.—*Applied Microbiology* 6(1), 9-14, 1958.

Better Colored Onion Flakes From Warm-Stored Bulbs

Onion bulbs should be stored at around 86F. if dried flakes of best quality are to be obtained. Although they look worse than bulbs stored at temperatures near freezing, quality of dried flakes is considerably better.

Right after drying, there is little difference in appearance. But after storage at room temperature for 15 months, flakes from bulbs held 4 months at 86F. were lighter in color. Also, onions kept better at this temperature so there was a higher yield of sound bulbs.—Calif. Agr. Expt. Sta., Davis, Calif.

Coating Fresh Cut Meats With Animal Fat Cuts Shrinkage, Protects Color, Texture

Protection of fresh cut meat against dehydration and darkening of color in storage, is accomplished by a patented process of spraying the cut surface with molten fat droplets.

Operation is carried out at a temperature low enough to cause the droplets of fat to congeal or partly solidify as they travel toward the meat which has previously been chilled.

Fat droplets are deposited in random layers, piled higher at some points than at others. The result is a flexible coating that does not crack or flake off like a film produced by dipping. Fat used should be obtained from the same species of animal as the meat to be coated.

In coating beef, for example, beef tallow at 140-160F. should be used. And temperature of atmosphere in which it is coated should be 35-40F.

Experimental tests showed that color and general condition of coated rib beef was far superior to uncoated samples, and shrinkage of the uncoated samples was higher than that of coated ones.—U.S. Patent 2,819,975, Jan. 14, 1958.

Liquid-Culture Mushrooms Good Sources of Protein

When grown in submerged aerated cultures, mushrooms are similar in nutritive properties to the Torula yeasts. However, they possess enzyme systems that are extensive and different from those of yeasts.

For this reason they can utilize lignins, cellulose, hemicelluloses, pectins and other polymers, and thus will grow on cheap substrates.

A study of 10 strains of mushrooms, including 4 *Agaricus campestris*, grown on a synthetic medium, and on media containing molasses and waste sulfite liquor, showed that three strains produced good yields of protein with an efficiency of about 15% on a protein to original sugar basis.

Boletus indecisus produced high yields of dry matter low in protein (25%) while *Morchella hybrida* and *Tricholoma nudum* produced a lower yield of mycelium containing about 37% protein.

Study of nutritive requirements of the last type showed that it yielded well when ammonium salts were a source of nitrogen, but that its growth was depressed by nitrates and urea.

A wide variety of carbon compounds could be utilized. Both molasses and waste sulfite liquor were good media. The pH optimum is 3.5-4.5 and neither aeration of the medium nor its phosphate concentration had much effect on mycelial yield or composition. — *Applied Microbiology* 6(1), 1-8, 1958.

Beer Foam Improved With Malt Flakes

"Chit malt", or very short grown malt, (40-48 hr.), dried at 205-212F., was suggested as a brew material by W. Windisch, as early as 1906. But it was adjudged contrary to the Bavarian "Reinheitsgebot", which permits only malt, hops, water and yeast to be used for beer production, so it quickly passed out of favor.

Recent experiments, however, have shown that up to 20% of it can be used in the mash without affecting chill sensitivity of the beer adversely and with possible improvement of foam.

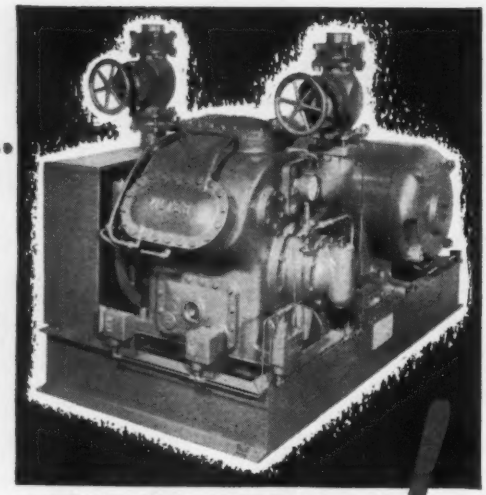
Trials were made in 6 breweries using "Spitzmalt" in brews at levels of 10-15%. It was found that wort run-off at lautering was delayed and that the brewhouse yield was reduced. Fermentation was normal, but attenuation was lower than that of control brews without it.

Beer color was not affected, but viscosity was increased because of the carry-over of beta-glucosans from the Spitzmalt. Foam was improved by about 5 Ross and Clarke Sigma units, and chill sensitivity was not affected adversely. At 10% the beer taste was not affected but at 15% the product

Before deciding...

compare the

Vilter VMC



COMPRESSOR—FREON OR AMMONIA

The compressor being the heart of the refrigeration system deserves the most attention. For dependable day-in-day-out operation, the compressor must be sturdy, well built, designed for long life. It must be easy to maintain. Naturally wearable parts must be easy to replace. You will save yourself future expense and needless worry if you see that your compressor incorporates the points below.

CHECK THESE POINTS	VILTER	5 OTHER WELL-KNOWN MAKES				
		A	B	C	D	E
1. Removable alloy steel cylinder sleeves that permit low cost, easy replacement. Eliminates need for oversize pistons, rings, etc., which are common in frame bored cylinders	Yes	Yes	No	No	Yes	Yes
2. A double bellows oil immersed shaft seal that prevents air or moisture from entering the system when operating below atmospheric pressure	Yes	No	No	No	No	No
3. A crankshaft double row roller bearing arrangement that allows the shaft to expand freely, thus preventing excessive thrust loads on the bearings	Yes	No	No	No	No	No
4. A statically and dynamically balanced crankshaft that assures smooth operation	Yes	Yes	Yes	Yes	—	Yes
5. Spring loaded safety heads that protect the compressor against refrigerant slugs	Yes	No	Yes	No	No	Yes
6. Removable connecting rod bearings that can be changed without also removing the connecting rod and piston assembly	Yes	No	Yes	Yes	Yes	Yes
7. Necessary to dismantle entire unit for repairs	No	No	Yes	Yes	No	No
8. Suitable for high stage or booster operation	Yes	Yes	No	No	Yes	Yes
9. Light weight aluminum pistons with upper half of piston wall having tapered thickness to conduct heat from top of piston. This prevents excessive piston expansion and reduces possibility of piston seizure	Yes	No	No	Yes	No	No
10. A separate oil filter, in addition to crankcase screen, to super-clean oil and thus reduce wear to a minimum	Yes	Yes	No	Yes	Yes	Yes

From this comparison, you know that *you get more for your money* with Vilter. It will pay you to consider Vilter for your next refrigeration or air conditioning installation.

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WRITE for your FREE Vilter Bulletins: No. 817—"Vilter VMC Ammonia Compressors"—and No. 820—"Vilter VMC Freon Compressors"—to THE VILTER MANUFACTURING CO. Dept. E-719, 2217 South First Street Milwaukee 7, Wisconsin

THE VILTER MANUFACTURING COMPANY, Milwaukee 7, Wisconsin

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was deemed poorer in taste quality.

A somewhat similar product, malt flakes, made by grinding the green Spitzmalt and drying it on heated rotating drums at 212F., gave similar results when used at the 10% level. —*Wissenschaftliche Beilage Monatsschrift für Brauerei* (10(12), 147-54, 1957.

Fruit Stemming Machine

In a continuous mechanical device recently patented, grapes, olives, and the like can have their stems removed without damage to the fruit.

Machine comprises frame supporting a motor that actuates the moving parts. Supported in the frame are spaced pairs of horizontal rollers extending to the discharge end of the machine. Rollers are covered with a rubber-like substance, and are made to rotate oppositely so that the engaging sides of each pair will move downwardly. Traveling above them is an endless sprocket chain structure carrying strips of rubber, notched at the lower end to move the fruit along.

In operation, any fruit that has a major and a minor axis with a stem on the former, rolls down feed chute onto head ends of rollers. Here they are automatically oriented so that their long axes are in a vertical plane, parallel with and between the rollers of each pair.

Traveling rubber strips engage the fruits, causing them to roll end over end from feed to discharge of the machine. Stems are engaged between the rollers and removed.

A machine having 6 pairs of rollers 36 in. long will stem about 2500 lb. of grapes per hr. when operated at normal speed.—U.S. Patent 2,819,745, Jan. 14, 1958.

New Powder Collector

A 96-tube multi-cyclone powder collector, the first of its kind to be used in England for dry milk has been installed in the Wellington factory of Alpin & Barrett, Ltd.

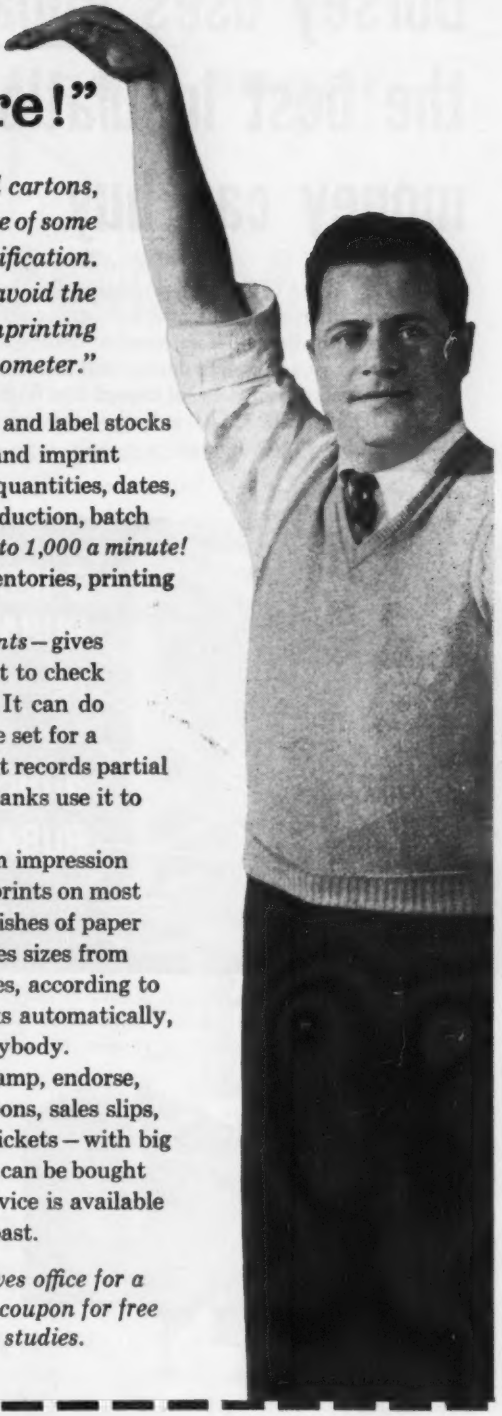
Unit is said to operate at 99.7% efficiency, improve product quality, and reduce labor requirement as compared to the previously used cone and bag filters.

Cyclones in the unit are arranged in 2 elements, each containing 48 cyclones in rows of 6, and each mounted at an angle of 45 deg. in the housing.

All air passages in the cast alumi-

"Piled up to here!"

"Used to have half our stockroom filled with small cartons, piled higher than a man's head – all useless, because of some change in content, weight, size, or some other specification. Cost us thousands of dollars every year! Now we avoid the waste, cut inventory and printing bills, by imprinting standard cartons as we need them – with our Tickometer."



- You can limit your carton and label stocks to basic forms and sizes – and imprint weights, sizes, lot numbers, quantities, dates, colors, etc., for the day's production, batch or special run – at speeds *up to 1,000 a minute!* And you cut down your inventories, printing bills and wastage.
- The Tickometer also *counts* – gives you a label or package count to check production and shipments. It can do consecutive numbering or be set for a predetermined count – and it records partial or full totals. So accurate, banks use it to count currency!
- It registers exactly, has an impression surface of 2 3/16 by 7/8 inches, prints on most all standard weights and finishes of paper and light card stock. Handles sizes from 1 x 2 inches to 15 x 15 inches, according to model size. Feeds and stacks automatically, and can be easily run by anybody.
- It is also used to mark, stamp, endorse, date, cancel and *count* coupons, sales slips, checks, forms, cards, tags, tickets – with big savings in time and effort. It can be bought or rented. Pitney-Bowes service is available from 302 points, coast to coast.

Call the nearest Pitney-Bowes office for a demonstration. Or send the coupon for free illustrated booklet and case studies.

Pitney-Bowes

TICKOMETER

Imprinting & Counting Machine

Made by the originator of the postage meter... offices in 107 cities in U.S. and Canada.

PITNEY-BOWES, INC.
3838 Walnut Street
Stamford, Conn.

Send Tickometer booklet and case studies

*Name*_____

*Address*_____

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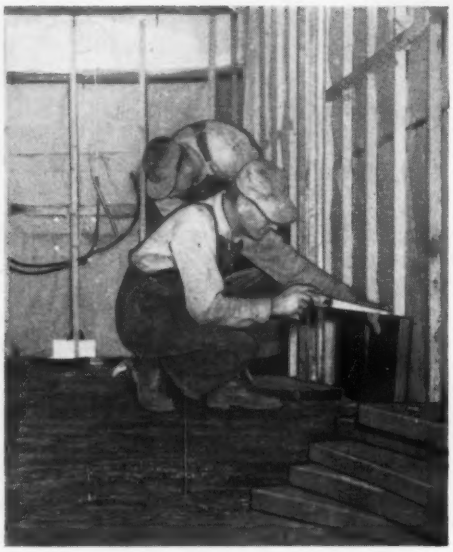
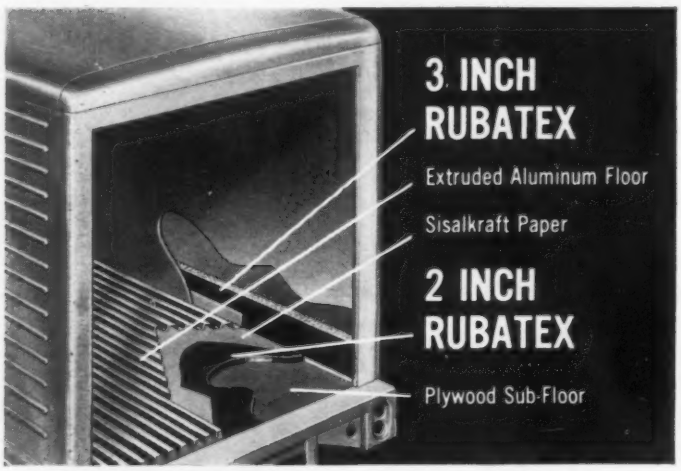
Dorsey uses Rubatex—the best insulation money can buy

RUBATEX cargo-protecting flooring insulation will prove that under the most extreme conditions your refrigerated trailer will hold constant desired temperature—will hold cost and weight down—will increase inside space and payload capacity. Proof enough that RUBATEX INSULATION HARDBOARD is the best flooring insulation money can buy?





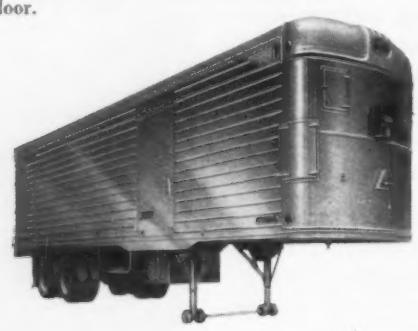
Rubatex Insulation Hardboard is easy to install—less labor cost in elimination of furring strips because Rubatex has enough structural strength to support extruded aluminum floor.

"RUBATEX IS STANDARD FLOOR INSULATION on our new REEFERATOR . . . gives us MAXIMUM INSULATION in bottom plus MORE CUBIC CARGO SPACE . . . its load-supporting, zero moisture pick-up properties ELIMINATE CONSIDERABLE WEIGHT IN FLOOR AND SUB-FLOOR CONSTRUCTION."

Dorsey Trailers, Inc.

You get peak performance with Rubatex—here's why:

- Lowest heat conductivity of any known structural material (K factor 0.21)
- Compressive strength (60 p. s. i.) strong enough to support floor alone
- Extremely light in weight (4½ p. c. f.)



RUBATEX
INSULATION HARDBOARD

RUBATEX DIVISION, Dept. FE-2
GREAT AMERICAN INDUSTRIES, INC.
Bedford, Virginia

For full details and sample of Rubatex Insulation Hardboard—print your name in space below, attach to your company letterhead and mail to us.

Name_____

Send for Free Samples and Data Sheets

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num cyclones are polished and engineered to fine limits to insure the aerodynamic balance of the unit and uninterrupted passage for the air.

Unit housing has channel extensions that serve as pivots for arms on the cover and tube plate. Both components can thus be swung to the open position in a few minutes to give complete accessibility to all parts for cleaning.—*FOOD*, 22-23. Jan. 1958.

Improving Aerating Power Of Liquid Shortenings

Addition of certain stearine triglycerides to liquid oils has been found to overcome the deficiency of the latter as all-purpose shortenings, namely, their failure to cause aeration in the mixing of cake batters.

Based on the accepted mechanism of plastic shortenings in cake-batter aeration, it was reasoned that satisfactory fluid shortenings would require solid ingredients in the form of fine particles.

This was accomplished by dispersing substantially insoluble triglycerides in salad oil at 175F. and allowing the blend to cool overnight at 85F. The dispersion was then held at least 24 hr. at room temperature before using.

Of many stearines used experimentally, the best were made from rapeseed and mustard seed oils and certain peanut oil fractions. Effective triglycerides in these stearines were of the monobehenodistearine and stearopalmitobehenin type.—*J. Amer. Oil Chemists' Society*, 28-32, Jan. 1958.

Falling Film Evaporator

A new Swiss evaporator that employs the falling film principle, differs from conventional type units in employment of a rotor with radial blades to spread product onto walls of a heated cylinder.

Evaporator consists of a vertical jacketed tube inside of which is a shaft driven by an overhead motor, and having several radial blades dimensioned so as to leave only small annular clearance. Blades extend nearly full length of shaft.

In operation, product enters upper part of tube where it is engaged by rotating blades and thrown against wall of tube. This results in: (1) Formation of a thin film on tube wall, thus insuring rapid heat transfer, and (2) production of sufficient

Low-cost quality insurance . . .

Filter liquid sugar...

TURBIDITY

... out of your processing picture

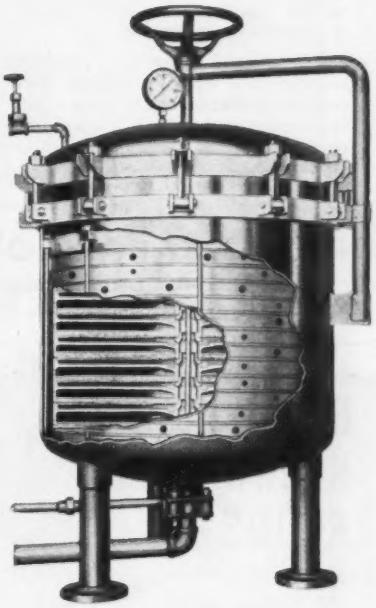
You can eliminate liquid sugar turbidity which may be impairing your product's flavor, aroma, clarity and shelf-life, *quickly and economically* in your own plant, with a Sparkler Horizontal Plate Filter—the refiner's own choice for reliable, efficient polishing performance.

Sparkler's *exclusive* horizontal plates provide complete stability to the cake with no danger of cracking or break through, even with pressure variation or complete shutdowns and start-ups. A thin even pre-coat can be applied to Sparkler's horizontal plates with low pressure, and a low density, porous cake built-up to assure high flow with fine sharp filtration throughout the cycle.

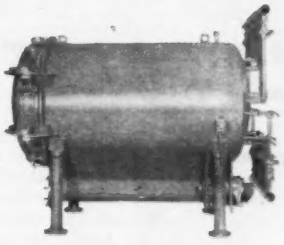
Completely stainless steel filters having access to all plate surfaces for thorough cleaning fulfill food industry sanitation requirements.

Design variations of the Standard Horizontal Plate Filter enable sugar units to be offered in a wide range of models and capacities at economical prices.

WRITE SUGAR DEPT. for additional information on Sparkler's complete line of sugar filtration equipment.



The SPARKLER Standard Horizontal Plate Filter



The SPARKLER RSC sugar refinery filter

SPARKLER FILTERS

SPARKLER MANUFACTURING CO.
Mundelein, Illinois

Sparkler International Ltd.
Plants in Canada, Holland, Italy and Australia.

Representatives in principal cities throughout the world

Filtration Engineering Exclusively for Over 30 Years

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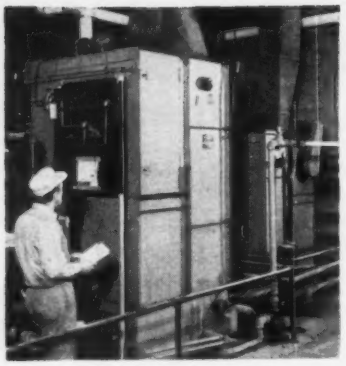
DRY and CLEAN AIR at the RIGHT TEMPERATURE

- to control your product quality
- to protect a critical operation
- to protect apparatus from moisture damage
- to DRY your material or product
- to control packing or storage conditions
- to assure precision in testing or research
- to increase air conditioning capacity



Air Condition by the NIAGARA Method Using HYGROL Liquid Absorbent

This compact method, giving high capacity in small space, removes moisture from air by contact with a liquid in a small spray chamber. The liquid spray contact temperature and the absorbent concentration, factors that are easily and positively controlled, determine exactly the amount of moisture remaining in the air.

Most effective because . . . it removes moisture as a separate function from cooling or heating and so gives a precise result, and always. Niagara machines using liquid contact means of drying air have given over 20 years of service. The apparatus is simple, parts are accessible, controls are trustworthy.

Most reliable because...the absorbent is continuously reconcentrated automatically. No moisture-sensitive instruments are required to control your conditions . . . no solids, salts or solutions of solids are used and there are no corrosive or reactive substances.

Most flexible because...you can obtain any condition at will and hold it as long as you wish in either continuous production, testing or storage.

Write for Bulletins 112 and 131 and complete information on your air conditioning problem.

NIAGARA BLOWER COMPANY

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LA PORTE FLEXIBLE STEEL CONVEYOR BELTING

because *this endless belt, that gives endless service,* protects product flavor and uniformity in Canning, Freezing, Pickling and Dehydrating. Besides, the OPEN MESH feature facilitates sterilizing with steam gun or scalding water, provides for fast drainage as well as circulation of air, liquids, heat and cold around products in process. Cuts costs in packaging and shipping, too.

Made from Galvanized Strip Steel ⅜" by .047, assembled with Galvanized Cross wire. Available in 3 standard open mesh sizes: ½" x ½", ½" x 1", 1" x 1", in any length and practically any width. (Stock widths 12", 18", 24", 30".)

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MAT AND MFG. CO.

BOX 124 *La Porte, Indiana*

Advances in Technology

turbulence to avoid local overheating.

As film falls down heated wall, its density increases as the moisture evaporates. Concentrated product is discharged from the bottom. Vapors rise and leave cylinder at top. Upper portion of tube is not jacketed and acts as a separator.—*Food Manufacture,* 508, Nov. 1957.

Orange-Milk Drink

Production of an orange-concentrate that will make a non-curdling drink when mixed with sweet milk is the basis of a patented process. Crux of the method is retention of substantial portions of peel oil and pectin normally locked in the peel cells and albedo.

In manufacture of the concentrate, clean whole oranges are passed through a screw-type juicer having a relatively long barrel, with exit holes through which the juice flows. Pulp is forced through small holes in the end plate.

In the juicer, peel and pulp are comminuted by knives. Oil and pectin are released and collected as the mass is pressed through the end plate. Coarse pulp is strained from the resulting fluid, and sugar is added to the extent of 25-30% of the extract, or about 5 lb./gal.

Product is packaged and frozen. The orange drink is made by adding one part concentrate to 4 parts sweet milk.—U.S. Patent 2,818,342, Dec. 31, 1957.

Monoglyceride Emulsifier

Superiority in consistency, texture, and flavor of frozen dessert, such as ice cream, is claimed for a patented process in which substantially pure monoglycerides are used as the principal emulsifier.

Invention claims to overcome disadvantages heretofore preventing use of monoglycerides which did not disperse readily, but tended to form sticky gelatinous structures. These are overcome by intimately mixing the monoglyceride with a triglyceride or other edible full fatty acid ester of a polyhydric alcohol. In such mixtures the monoglyceride disperses readily.

Minimum amount of triglyceride is critical and must not be less than 15%. There is no critical upper limit, however. But it is preferable to use as high a proportion of monoglyceride as possible, say 50-80%.

For safer, easier equipment cleaning . . .

DRY

ACID CLEANERS

based on Du Pont sulfamic acid

• Cleaning compounds based on Du Pont sulfamic acid are handled *dry*, until they are dissolved for use.

New cleaning compounds made with sulfamic acid are sold and handled *dry*—no hazardous liquids to ship or store. Dry, or dissolved in water for use, they create no fumes. Yet these cleaners have all the penetrating power of hydrochloric acid with far less corrosive effect.

Sulfamic acid-based cleaners remove scale and deposits from air-conditioning and ice-making equipment, food-processing vessels, steam boilers, milk evaporators and pasteurizers, marine evaporators and heat exchangers. Cleaning action is fast, thorough.

We'll gladly send you more information on sulfamic acid-based cleaners and the names of formulators who offer these new compounds. Just mail the coupon below.

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SULFAMIC ACID

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REG. U. S. PAT. OFF.

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Grasselli Chemicals Dept., N2533, Wilmington 98, Del.

Please send me: ☐ sulfamic acid general equipment-cleaning bulletin; ☐ names of formulators offering cleaners based on sulfamic acid.

*Name*_____

*Company*_____

*Address*_____

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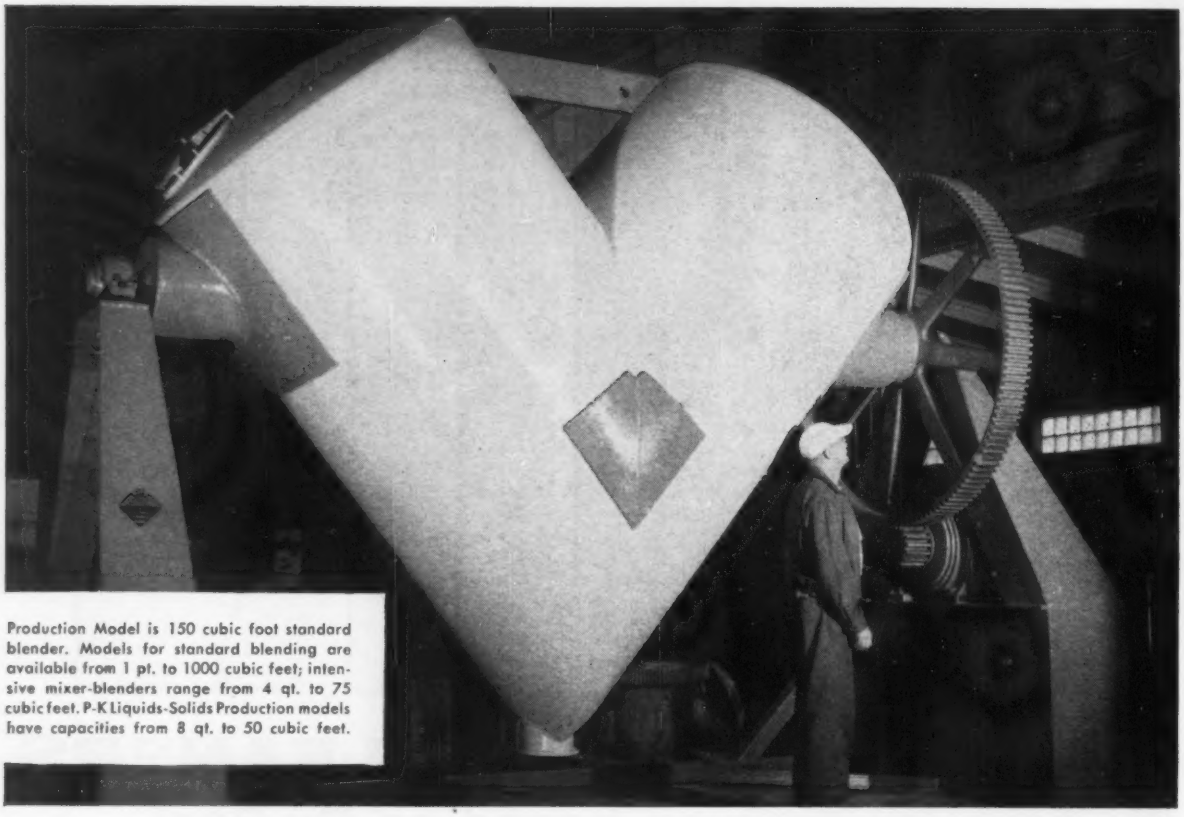


Production Model is 150 cubic foot standard blender. Models for standard blending are available from 1 pt. to 1000 cubic feet; intensive mixer-blenders range from 4 qt. to 75 cubic feet. P-K Liquids-Solids Production models have capacities from 8 qt. to 50 cubic feet.

Production Results Prove Superiority of P-K's New Blending Concept

Leading companies in virtually all the chemical and process industries have found that P-K "Twin-Shell" blenders have met their blending requirements better . . . faster . . . and more economically than conventional mixer-blenders.

P-K makes 3 types of "Twin-Shell" models to meet practically all blending functions – there is a production model for standard precision blending, a model for *intensive* mixing-blending, a model where exact quantities of liquids are introduced and intimately blended into dry solids.

These models are all based on P-K's radically different "Twin-Shell" blending concept which has a proven mechanical advantage that pays off in fast, consistently uniform blends . . . dust-free, moisture-proof operation . . . and quick, easy discharging.

The fundamental "Twin-Shell" mixing principle combines a gentle rolling, folding and dividing action within the entire mass of material to create a rapid and uniform blending of formulations regardless of varying particle size, shape or density. Furthermore, the smooth, interior of the "Twin-Shell" blender shape affords complete accessibility for fast, easy cleaning – quick changeover for new formulations without fear of contamination.

Prove these benefits yourself at P-K's Customer Service Lab

P-K can help you to determine accurately the right type of "Twin-Shell" blender for your needs. Complete lab facilities are available for blending materials from 4 qts. to 3 cubic feet (working capacities) – comparison tests can be made on the spot. You and your staff can conduct your own blending studies . . . or you can utilize P-K's qualified blender technicians to assist you in product research. This service is available without obligation because P-K recognizes that more and more companies realize the importance of pre-testing before purchase – they realize too, the need to keep their present blending methods up-to-date. If it is impossible for you to conduct these tests personally, arrangements can be made for you to send us your formulations for testing. In either case, contact Russell Dotter at P-K.

For technical data on P-K "Twin-Shell" blenders for production or laboratory use, write for bulletins 15a-1 (lab) or 15 (production). The Patterson-Kelley Co., Inc., 1504 Hanson Street, East Stroudsburg, Pa. Phone: Stroudsburg 820.

All P-K "Twin-Shell" blenders are patented and the name registered.

15

Patterson Kelley

Chemical and Process Division

P-K "Twin-Shell" Blenders • Heat Exchangers • Packaged Pilot Plants • P-K Lever-Lock Doors • P-K Vacuum Dryer Blenders

Maximum amount of such an emulsifier in a frozen dessert is not critical but probably will be fixed by governmental regulations at about 0.5%.—U.S. Patent 2,821,480, Jan. 28, 1958.

Refined Safflower Oil Suitable for Salads

Alkali-refining of safflower oil results in a salad oil of good initial quality, with good flavor stability, when stored in the dark at 140F. And its oxidative stability is further improved by treatment with a metal scavenger and an antioxidant.

This was demonstrated in pilot-plant tests at NURDD, with 2 lots of commercially refined oils. Its suitability for cooking was not determined in the tests.—*J. of Amer. Oil Chemists' Soc.*, 97-99, Feb. 1958.

Coating Food Products With Non-Sticky Jell

Object of a recently patented invention is production of jell-coated fruits, nuts, and confections.

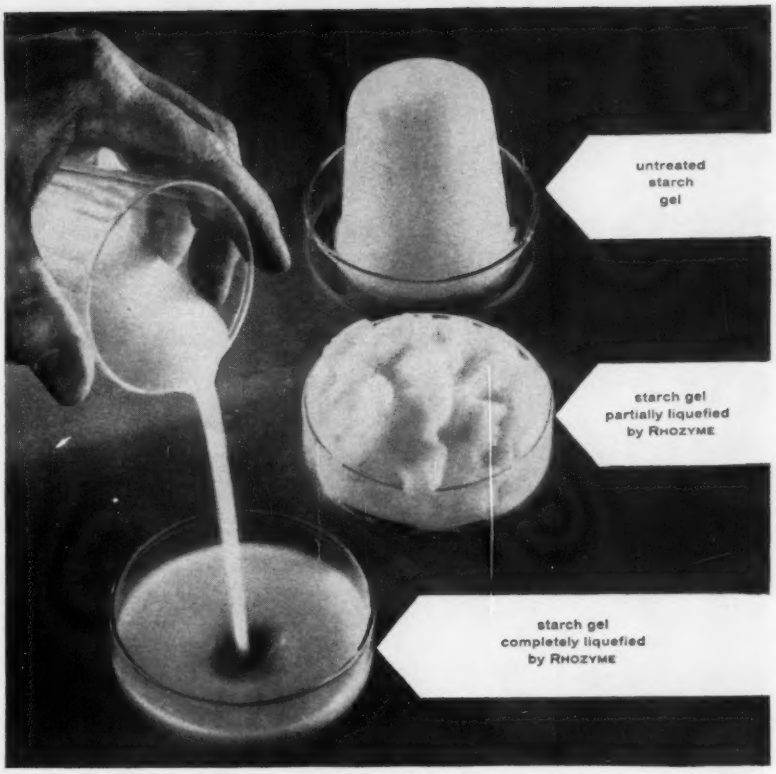
Critical feature of the process is preparation of the jell so that it can be applied without producing a hopelessly sticky mass. Gelatin, pectin, starch and similar products may be used. Various additives may be used for the purpose of preservation, flavoring, etc.

Typical procedure uses a formula containing sucrose, glucose, corn sugar, starch, citric acid, and water. Mixture is concentrated to 80% solids by boiling under vacuum of 27 in. It is then deposited on a bed of starch in slabs ½-in. thick, 4 in. wide by 8 in. long. Slabs are first cooled for a few minutes at 30F., then transferred to a −48F. atmosphere.

Brittle slabs are then crushed to 1-in. size and comminuted in a hammer mill having ⅜-in. openings. Dry ice may be used in latter operation to maintain low temperature.

Food object to be coated is warmed to a temperature that will cause the jell particles to melt on contact with its surface. For example, temperature of food particle may be 140F. and that of the jell −40F.

After coating, object is removed from excess mass of jell and allowed to cure. Latter process will vary with type of food.—U.S. Patent 2,821,477, Jan. 28, 1958.



RHOZYME

Diastatic Enzymes

For controlled processing of food starches

By using RHOZYME Diastatic Enzymes to solubilize, saccharify, or modify food starches, you can have more appealing end products and easier processing without impairing other vital food properties. As in the case of the starch gels shown, RHOZYME Diastatic Enzymes bring about specific, controlled liquefaction with no undesirable side reactions.

This selective action, coupled with the simplicity and low cost of enzyme treatment, makes these diastatic enzymes efficient agents to perform many other processing operations such as . . . recovery of sugar from candy scrap by liquefying the starch and thereby permitting color and flavor removal at higher solids levels . . . helping to lower production costs of pre-cooked breakfast cereals by allowing processing at higher solids levels . . . improving the texture, grain, and shelf-life of bread.

If you have a starch processing problem, why not write to Dept. SP for additional information on RHOZYME Diastatic Enzymes?

RHOZYME *is a trade-mark, Reg. U.S. Pat. Off. and in principal foreign countries.*

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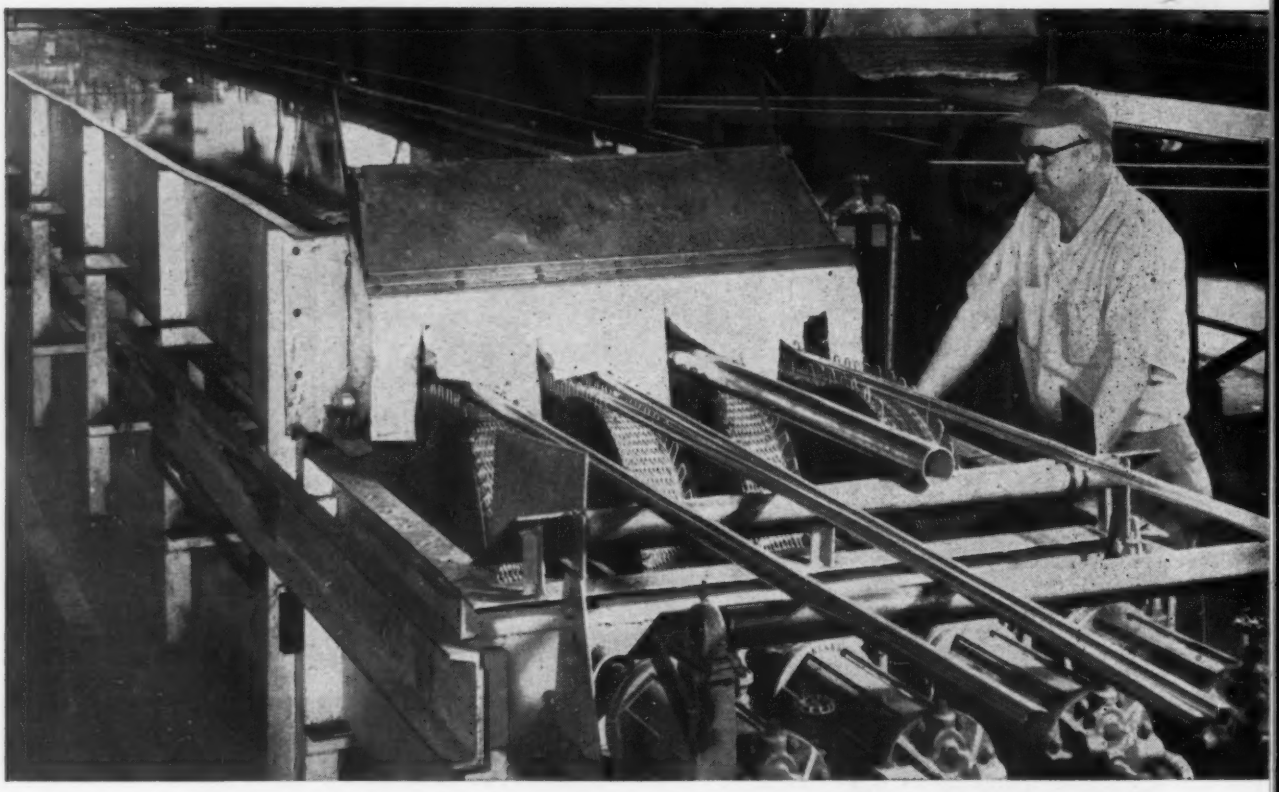
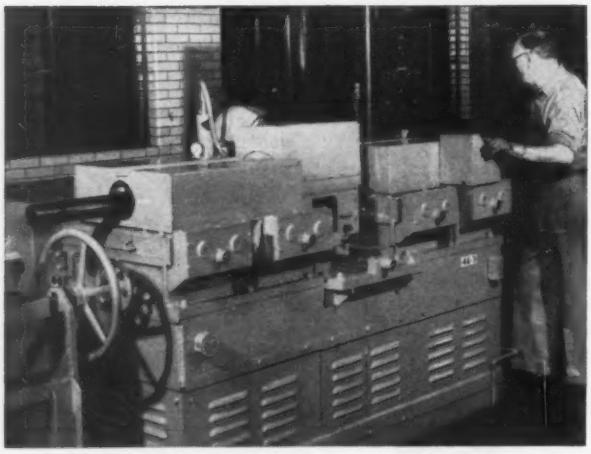


Bright Annealing Preserves Dense, Lustrous Surface of ELECTRUNITE Stainless Steel Tubing



FARROWTEST® is the best in non-destructive tests for tube irregularities. Tube moves through a group of test coils. The signal from these coils remains constant as long as tube is uniform and defect-free. Only Republic offers this electronic "eddy current" type non-destructive test. And it's available at the same cost as regular hydrostatic testing.

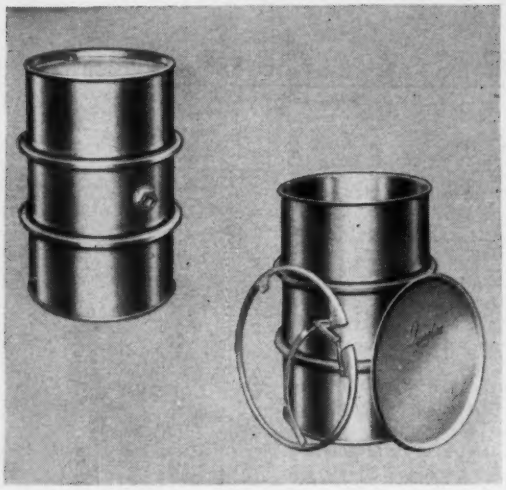
Here's news for every processor who needs stainless steel tubing and pipe with a dense, lustrous finish on both I.D. and O.D. Republic Steel and Tubes Division's new continuous bright annealing process produces a tube with a hard, high-quality finish in sizes from ¼″ to 4″ O.D. No scale is formed and no etching acid pickling is required.

Laboratory measurements show this finish to be smoother than ordinary pickled and open fire annealed tubing and pipe. This surface tends to resist build-up and caking of solids in piping and heat transfer equipment.

For many sanitary tubing applications, this bright annealed finish can be put into the line with no further polishing. Where further processing may be required, this bright surface cuts polishing to a minimum.

As in all of Republic's full line of stainless tubing and pipe, bright annealed products are produced from flat-rolled ENDURO® Stainless Steel, cold formed into tubular shape and joined by the "inert-arc" welding process. Every foot is uniform in wall thickness, of uniform diameter, and meets every requirement called for by ASTM and ASME specifications. Every foot reflects the skill and experience of the world's leading specialty tube maker.

Send coupon for more information on reducing your tubing costs with ELECTRUNITE bright annealed Stainless Steel Tubing, or call your Republic ELECTRUNITE representative.



MAXIMUM PROTECTION for your food products during storing or shipping is provided by Republic ENDURO Stainless Steel Drums and Barrels. They resist corrosion. Withstand hard use and abuse. ENDURO Drums and Barrels never need painting. Available in 30- and 50-gallon capacities. For more information about Republic Containers send coupon below.

FOOD, MEAT AND FISH PROCESSORS using salt or brine can end costly corrosion problems with Republic Titanium. It is impervious to the corrosive effect and pitting action of salt water and brine. Titanium equipment is easy to handle. It is as strong as steel, yet weighs only 56% as much. Republic metallurgists and engineers will help you apply this versatile metal to your production. Write today.

BREWERIES discovered years ago that ENDURO Stainless Steel is a valuable asset in producing beer with predictable and unvarying flavor, purity and clarity. ENDURO is completely inert in the presence of wort and beer. Danger of metallic contamination is eliminated. ENDURO's easy-clean and easy-to-keep-clean qualities mean that equipment has more productive hours and extra earning capacity. Send coupon for additional information.

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Please send more information on the following subjects:

- ☐ Republic ELECTRUNITE® Stainless Steel Bright Annealed Tubing
- ☐ Republic FARROWTEST
- ☐ Republic Titanium
- ☐ Republic Stainless Steel Containers
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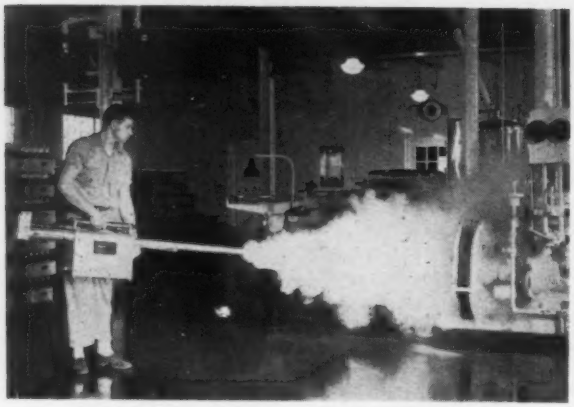

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WEIGHS JUST 19 LBS.

- "Outfogs" anything in its class—extremely dense insecticide fog output at rates up to 15 gal. per hour.
- Fog particle size selection from 0.5 to 50 microns.
- Only 1 moving part. Nothing to lubricate.
- Safety assured by new automatic formulation shut-off valve.

Sells for

Only $289.50

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NOTE: We also make a Dyna-Fog insecticidal fogging machine that does work of 650 lb. and heavier machines, yet weighs only 100 lbs!

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AUTOMOTIVE DEVICES, INC.

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MEN & COMPANIES

Bigger and Better Fast . . . National Biscuit Co. has an acquisitive gleam in its corporate eye.

Company managements, take note. If you spot an earnest shopper jingling his coins on your premises, could be it's Roy K. Kelley, v.-p. of Nabisco's newly-created Corporate Development Div.

Plan is company growth "via the merger or acquisition route." And Mr. Kelley's job is to "case" possibilities in the food areas related to but as yet untried by Nabisco.

He says: "Our thinking is mainly directed toward nonstatic companies that have a sound history, good management, and which have demonstrated their potential through successful research and development.

Roy K. Kelley

"But other situations can conceivably be of interest."

For the past year, Mr. Kelley has been president of the company's Dromedary Div.—acquired by purchase, and now merged with Special Products Div.

Mrs. Giovanni Buitoni

First Lady of Buitoni . . . Tighter, better relations among Buitoni enterprises—in Italy, France, U. S.—are the firm's sights for its new post, v.-p. of international relations.

Appointed to it is Mrs. Giovanni Buitoni, wife of the company's president.

She has been general director of International Buitoni Organization in Rome, "commuting" between U. S. and Italy. "Glamor" V.-P. Letizia works for a firm that was founded by another unusual woman, Giulia Buitoni—in 1827.

Among international projects are package-uniformity moves, also introduction of Buitoni frozen foods in Italy.

Meat Strategy . . . Oscar Mayer & Co. sees tough times continuing in '58 for packers. To cope, it will apply efficiency, economy, and vigorous selling.

For long-range success, company emphasizes it expects to maintain its '57 level of capital expense ($5,159,000).

It has promoted Merchandising V.-P. G. O. Mayer to exec. v.-p., and Planning-Engineering V.-P. Adolph C. Bolz to sr. v.-p. Sales V.-P. William T. Murray becomes marketing v.-p.

G. O. Mayer

more precise uniformity than your eye can measure

Shade, pure-dye strength and composition of National Certified Food Colors are precisely standardized for unfailing uniformity in use.

For every color and blend "color-coordinates" are established against which all subsequent lots are checked. This is done with the spectrophotometer, a device far more precise than the human eye.

As a result, no ingredient you use in your product is more unvarying than National Certified Food Colors.

We will gladly put our well-equipped laboratories and 50-years' experience to work on your color formulations or re-formulations. A call to our nearest office will get prompt, intelligent action.

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NATIONAL ANILINE DIVISION ALLIED CHEMICAL & DYE CORPORATION • 40 RECTOR ST. NEW YORK 6, N. Y.

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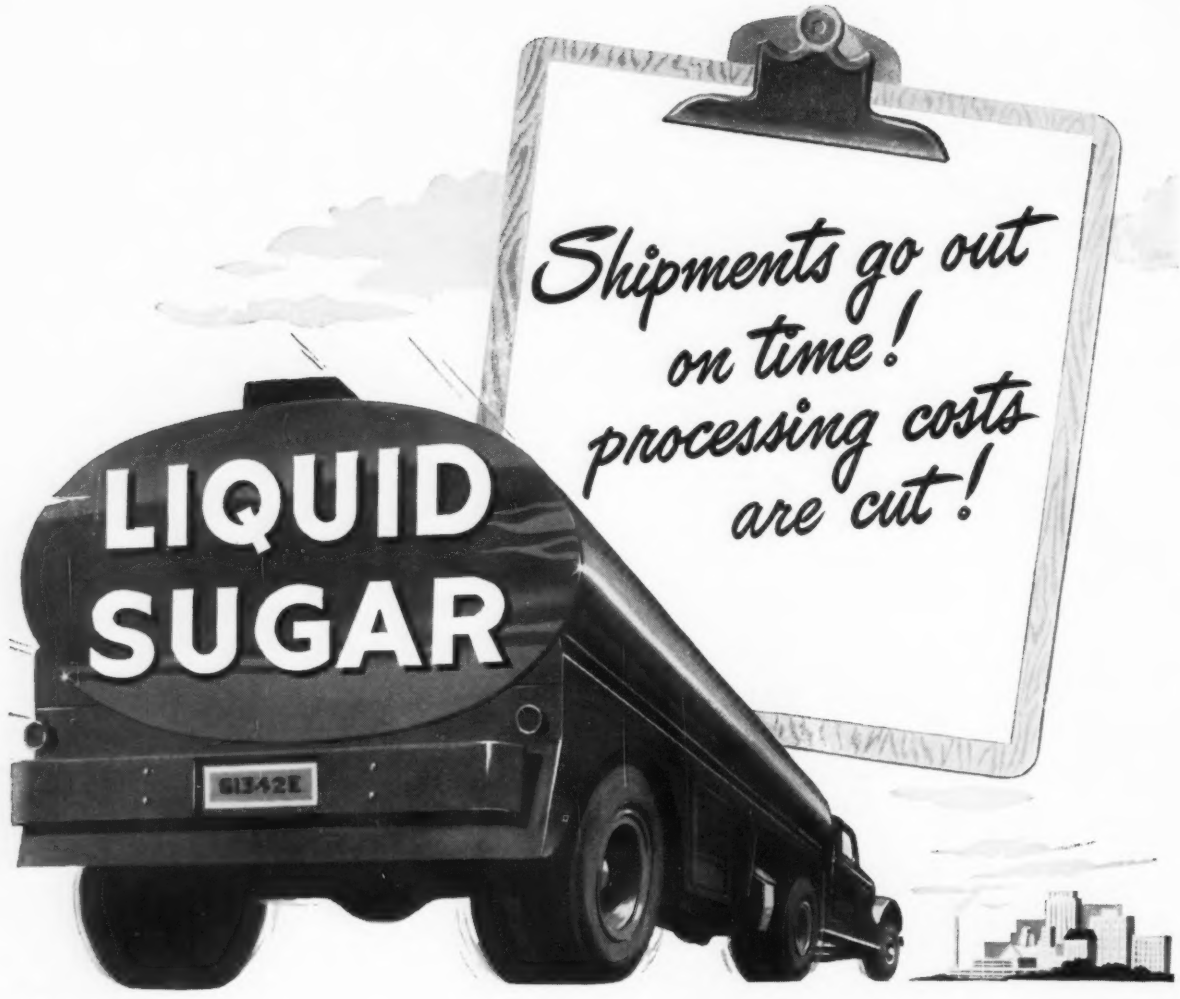


YOU SAVE both time and money when you clarify sugar liquors with Celite* diatomite filter aids. Save time because Celite filtration lets you combine P_2O_5 lime defecation, decolorization and clarification *all* in one operation (and insures you of outstanding color removal and brilliant clarity, too). Save money because you use your existing mixing tanks and filters and reduce decolorizing vegetable carbon consumption. In addition, in bone char refineries, char filter loads are also reduced when Celite filtration is used.

Celite also gives you important advantages over other diatomites. First, its lower wet density provides greater filter surface coverage . . . six bags do the work of seven bags of other diatomites. Second, you get more consistent results because Celite is more uniform. Each bag is mined and processed at the world's largest and purest commercial diatomite deposit . . . and sped to you direct or through J-M's nationwide warehouse network.

JOHNS-MANVILLE JM PRODUCTS

For more information on how Celite filtration can save you time and money and give you better filtration results, call your nearby Celite engineer or write Johns-Manville, Box 14, New York 16, N.Y. In Canada, Port Credit, Ontario.

Johns-Manville CELITE
diatomite filter aids

when you filter with CELITE

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products

Dr. Ben F. Buchanan

Product Development . . . New associate director of product development at General Foods' plush research center, Tarrytown, N. Y., is Dr. Ben F. Buchanan.

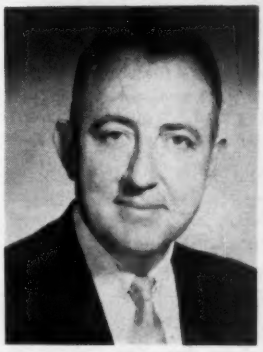
The job encompasses development of new products and by-products, improvement of quality and processes, and investigation of new raw materials.

Pace GF sets for product development shows up in fact that over ⅓ of its net sales recently comprise postwar-developed foods (see FE, Feb.).

Upgrade Bulk Service . . . McCormick & Co., Inc., has upped Edward J. Vinnicombe, Jr., general manager of its institutional division, to v.-p.

President John N. Curlett says the move "emphasizes the growing importance we are placing on servicing institutional and bulk users of our products."

Organized in '56, the division has expanded its products to several convenience items, such as instant mashed potatoes, potato nuggets, dried sliced onions, etc.



Edward J. Vinnicombe, Jr.

Dr. Bernard L. Oser

Growing Like "Topsy" . . . Host at official opening of Food & Drug Research Laboratories' recently acquired larger quarters was its new president, Dr. Bernard L. Oser.

The present expansion is one indicator of food companies' stepped up reliance on independent research facilities.

Among thousands of experimental animals that FDRL moved to the new home are white rats representing 80th generation of the same strain.

Ed Burrows, manager of potato chip division of Nalley's, Inc., Tacoma, has been elected president of Northwest Potato Chip Industry.

J. Dudley Calhoun has been appointed exec. v.-p. of Arnold Bakers, Inc.

Dr. Conrad A. Elvehjem is now president of U. of Wisconsin. Pioneer member of scientific advisory committee of American Institute of Baking, he has received many honors for his contributions to nutrition. Recently AIB commemorated 20th anniversary of his isolation of niacin with Golden Loaf Award (FE, Dec. '57).

Dr. Paul F. Hopper has been named director of food industry development in Farm & Home Div. of American Cyanamid Co.

The Answer to Your Wash-Up Problems!
OPEN WALL TYPE
Hot and Cold Water
or
Steam and Cold Water
right where
you need it.
RECESSED WALL TYPE
For concealed piping on new installations. This unit is removable and the entire assembly is covered by an attractive stainless steel plate.
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PRESERVE COLOR
PRESERVE FLAVOR
ECONOMICALLY
WITH
TAKAMINE
SODIUM ISOASCORBATE AND ISOASCORBIC ACID

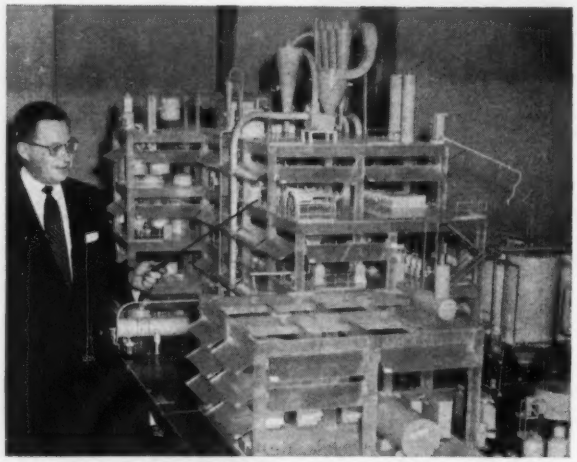
These TAKAMINE antioxidants have proved completely reliable in the processing of frozen fruits, canned vegetables, beer, carbonated beverages, meats and fish. They protect the natural color and flavor and assure longer shelf-life. It's the easy, efficient way to control food quality, increase customer satisfaction, and assure greater profits for you!

It will TASTE better
LOOK better
SELL better
with TAKAMINE products

Write our Technical Service Department for complete information pertaining to your particular product problem!

TAKAMINE LABORATORY

DIVISION OF MILES LABORATORIES, INC.
CLIFTON, NEW JERSEY



Scale model of Corn Products Refining Co.'s $2 million plant for Cali, Colombia. According to builder, Walter Kidde Constructors, Inc., plant will "embody the latest techniques in corn processing and is probably most advanced of its type in the world." It will consist of 5 structures, largest to be 5-story wet starch and processing building.

Lincoln McConnell moves up to presidency of Canada Dry International, Inc.

Andreas F. Reising, Sunrise Bakery, Inc., New Orleans, is 1958 president of American Society of Bakery Engineers.

Industry

California Packing Corp. reports that its sales for fiscal year ended Feb. 28 hit $287,632,236, an increase of 12½%.

Castle & Cooke, Ltd., Honolulu, and **Helemano Co.** plan merger. New corporation will have direct control of almost 50% of Hawaiian Pineapple Co. stock.

Consolidated Dairy Products Co. has opened new $1 million distributing facility in Alhambra, Calif.

Frozen Potato Products Institute is name of new trade association group, made up of firms processing almost total volume of frozen potato products. Members last year sold more than 200 million lb.

Gerber Products Co. has purchased 40-acre site in Buncombe County, N. C., and will erect a new plant.

International Packers, Ltd., stockholders will vote this month on deal to exchange 885,000 shares of firm's common stock for certain foreign meat packing plants, sales units, and goodwill of **Armour & Co.** President W. W. Prince noted at Armour's annual meeting that foreign trade has become increasingly difficult "primarily because of the natural involvements of national governments." **The sale** to International Packers, he says, means "satisfactory dividends in the future" for Armour, and permits its "frozen foreign assets to become a marketable investment."

Associated Industries

Canning Machinery & Supplies Assn. has elected John C. Swift, general sales mgr. of White Cap Co., as president.

Owens-Illinois Glass Co. has opened its new glass container plant in Atlanta. Multi-million dollar facilities include two glass container furnaces termed largest in world. The 619,000-sq.ft. plant is designed for expansion as required.

J. S. Turner White Metal Co., New Brunswick, N. J., has changed its name to **Turner Tube Corp.**

Deaths

Philip H. Kemper, 57, adv. mgr. of Bowman Dairy Co.

Fred Pabst, 88, chairman emeritus of Pabst Brewing Co.

BFM

Automatic High-Speed Packeting

The BFM Liquid Packeter

for ALL viscous, semi-viscous and free-flowing liquids

FORMS and FILLS in one operation . . . fully automatic. 30 to 50 cycles per minute — 2 to 8 packets per cycle . . . high speed.

POSITIVE SEALING with air-operated sealing dies . . . eliminates "leakers."

QUICKLY and EASILY ADJUSTED for packet sizes for 1⅜" to 5" long and up to 4½" wide.

VERSATILE . . . handles plastics, papers, foils, laminates, etc.

PISTON or MOYNO PUMP FEED accurate quantity every time.

AUTOMATIC PACKAGING BFM SINCE 1886

THE ONLY PACKETING MACHINE SPECIFICALLY DESIGNED FOR LIQUIDS.

For further information write

BROWN FILLING MACHINE COMPANY, INC.

Division of FRANKLIN RESEARCH CORPORATION

America's Pioneer in Packeting Machinery

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LIQUID FOOD METER

Save through Product Control with the

Siemens

SANITARY FLOW METER

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PROCESS IMPROVING
FAST-ACTING
EASY TO CLEAN

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distributed in U.S.A. and Canada by T.E.A. Inc., 141-21, 72nd Ave., Flushing, New York

For more data, circle this page number on card at back →

"these steam traps save us 30,000 gals. of fuel oil a year"

Yarways are responsible for cutting our fuel oil bill 20%

Q. Mr. Melcher*, you've been using Yarway Impulse Steam Traps in this packing plant for over two years. What's your experience?

A. It's all been good. As a direct result of changing to Yarway Traps we save 30,000 gallons of fuel oil a year—or about 20% on our oil bill. Temperatures now stay hot and steady.

Q. Where do you have these Yarway Traps installed?

A. On all the steam coils for the smokehouses, heating exhaust fans and hot water generators.

Q. How about maintenance?

A. We haven't touched a Yarway Trap in the two years we've had 'em. With only one small moving part, there's not much to go wrong. Previously, with other traps, we averaged over $300. a year for trap maintenance.

Q. You'd recommend Yarway Impulse Steam Traps, then?

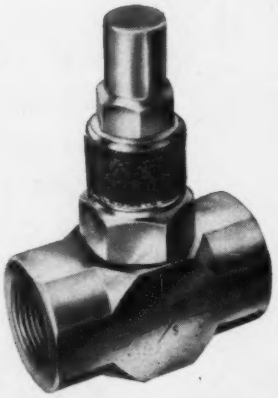
A. I don't have to. The record speaks for itself!

If you'd like a copy of a new booklet, "The How and Why of Steam Trapping", drop a card to

YARNALL-WARING COMPANY
127 Mermaid Avenue,
Philadelphia 18, Pa.

We have Yarways on steam coils for all our smokehouses

*GEORGE E. MELCHER,
*Chief Engineer,
large eastern meat packing plant.*



YARWAY impulse ...a good way to specify steam traps

OVER 1,200,000 YARWAY IMPULSE STEAM TRAPS ALREADY USED • STOCKED AND SOLD BY 275 CONVENIENT LOCAL INDUSTRIAL DISTRIBUTORS • NATION-WIDE YARWAY ENGINEERING STAFF AT YOUR SERVICE.

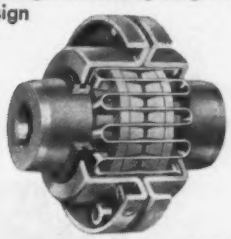
How one FALK coupling saved more than $1,000 per month

Pictured below is a Falk Steelflex Coupling assembly which connects a 2500 hp motor to a reduction unit driving an 18″ bar mill in a Midwestern steel plant. This coupling replaced another type which broke repeatedly, causing maintenance expense averaging $1,000 a month—plus costly production losses. Since installation of the Falk Coupling, with its controlled torque mechanism that disengages when a predetermined overload occurs, there has been no interruption of production. Savings in maintenance and in lost production time are well in excess of $1,000 per month...dramatic proof of the importance of coupling design!

Long coupling life is not the sole criterion of coupling performance. Inadequate shaft couplings may be the cause of bearing damage or shaft breakage on your machines. If so, a change to Falk Steelflex will give two-fold protection to your connected machines: (1) compensation for reasonable degrees of shaft misalignment, and (2) torsional resiliency to reduce peak loads as much as 30%. These advantages are as important to you as the long service life of the Falk Steelflex Coupling itself.

Falk Steelflex Couplings, in types and sizes to meet virtually all industrial applications, are promptly available from distributor, warehouse and factory stocks. Consult your Falk Representative or Authorized Falk Distributor.

Basic **Type F**—cutaway view showing exclusive grid-groove design



THE FALK STEELFLEX ...a truly flexible coupling

Here is the coupling that has all the strength of steel, yet is truly flexible. *More than a million* have been bought for industrial service of many kinds.

Because, in addition to its inherent superiorities of design, the Type F Steelflex can be used horizontally or vertically without modification or special parts, it has been adopted as standard in many plants—and by many designers and manufacturers of industrial equipment...Write for Bulletin 4100.

THE FALK CORPORATION, MILWAUKEE 1, WISCONSIN

MANUFACTURERS OF QUALITY GEAR DRIVES AND FLEXIBLE SHAFT COUPLINGS

Representatives and Distributors in many principal cities

Good couplings not only connect machines; they prolong machine life and boost production!

The Year Advertising Helped

This editorial message was first published by McGraw-Hill two years ago. It describes advertising's dramatic contribution to the American economy during 1954. The theme of the editorial—that advertising can help promote economic stability by stimulating sales at a crucial time—is even more pertinent today.

As our economy grows, it is constantly changing. The conditions business faces today are not the same in every respect as those it faced in 1954. But business again has the opportunity, through advertising and other selling efforts, to help sustain a high level of economic activity. At the same time, it will be building markets for the period of renewed expansion that is sure to follow.

This editorial is reprinted exactly as it appeared in 1956 except for minor editorial changes to bring it up to date. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or parts of the text.

Donald C. McGraw

PRESIDENT

McGraw-Hill Publishing Company, Inc.

IN 1954 we had a business recession in the United States. Sales fell about 4% during the year. If management had followed the historic pattern of business ups and downs, advertising volume would have fallen much further.

But in 1954 the volume of advertising did not fall. It increased over 5%, and expenditures in all major advertising media rose. Every effort was made to stimulate sales when sales were needed to sustain prosperity.

This was something entirely new under the sun. It had a powerful influence in making the recession of 1953-54 one of the mildest on record. It helped greatly to speed business on to the record-breaking levels it attained in the years 1955-57.

There are several reasons why America's business management attacked this decline in sales with more advertising. One of them grew out of the greatly strengthened position of the American consuming market. Consumers' income after taxes has been rising an average of over $10 billion a year since 1946, and this rising income is more widely distributed than ever before. Furthermore, consumers had piled up reserves of about $200 billion in cash or its equivalent. These reserves offered a new and powerful inducement to increased selling and advertising effort even in the face of a possible decline in consumer income. (At the end of 1957, consumer reserves were $225 billion.)

Taking the Longer View

However, the principal reason why a sales decline was attacked with increased advertising is management's new-found conviction that good advertising is essentially an investment in the development of a market. Successful development requires sustained investment. The inclination of business management to take this longer view is, of course, motivated

McGraw-Hill PUBLISHING COMPANY,

ABP HEADQUARTERS FOR

Kill a Business Recession

by the fact that the American market, with over 3 million consumers being added annually, is growing at a prodigious rate.

Ten years ago only a handful of companies had plans for investment in new producing facilities extending beyond the current year. Today almost all leading companies have investment programs running some years ahead. And keeping pace with these long-range investment plans has been the development of sales and advertising programs to reach tomorrow's greatly expanded markets.

Advertising's Key Role

This crucial role of advertising in providing driving power for our economy is gaining greater recognition every day. In his book, "People of Plenty," Professor David M. Potter of Yale University remarked: "Advertising is not badly needed in an economy of scarcity, because total demand is usually equal to or in excess of total supply, and every producer can normally sell as much as he produces. It is when potential supply outstrips demand—that is, when abundance prevails—that advertising begins to fulfill a really essential economic function."

Today abundance so completely prevails in the United States that it has been conservatively estimated that as much as a third of everything offered for sale falls in the realm of "optional consumption." That is, consumers can "take it or leave it" without any immediate personal inconvenience. But if they decide to "leave it," a terrific economic depression will not be far behind. In such circumstances, advertising—in which, in all of its forms, we are now investing over $10 billion annually—clearly is of crucial importance to our continued prosperity.

In performing its key role in past years, American advertising never realized its full potential. It successfully promoted sales. But it never was called upon to promote an overall economic stability as a direct outgrowth of increased sales.

By successfully promoting both sales and economic stability, as it did in 1954, advertising surely has added new strength to the American economy. It has also added a great new and constructive dimension to advertising itself.

One of the surest means of expanding your sales volume in today's industrial markets is through dominant advertising in the publications directly serving your major customers and prospects.

McGraw-Hill's business and technical publications can give you quick access to the men who initiate, specify and approve the purchases of industrial products and services. Because all are leaders in their respective fields, you are assured a maximum return on your advertising investment when you *concentrate* in the McGraw-Hill publications serving your most important markets.

INCORPORATED · 330 West 42nd St., New York 36, N. Y.

B U S I N E S S I N F O R M A T I O N

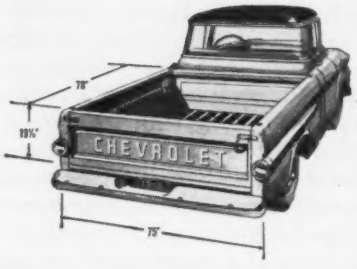
Just out! The newest in pickups!

NEW FLEETSIDE BY CHEVROLET

Here's the new sweetheart of the Task-Force fleet, Chevrolet's new Fleetside pickup! No truck has ever been better to look at . . . or better for your business.

Long, sweeping lines, graceful body contours . . . *new* truck appearance that's fleet, dashing and completely modern! Yet there's even more to the new Chevrolet Fleetside than the striking beauty that first meets your eye. There's *size*, for instance: extra room inside to pack many additional cubic feet of payload. And with double-walled lower side panels, durable hardwood floor, and solidly constructed full-width tailgate, the new Fleetside is the toughest of pickup bodies, too! A new adjustable latch keeps graintight tailgate free from rattles.

Here's a new high in hard-working utility, matched by new styling that makes you stand out on any street. See the new Fleetside at your Chevrolet dealer's now! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.



More load space than any other comparable low-priced pickup. In lengths of either 78 inches or 98* inches and a full six feet in width, this new body actually provides 50% more cubic capacity than the conventional pickup box! **Optional at extra cost.*

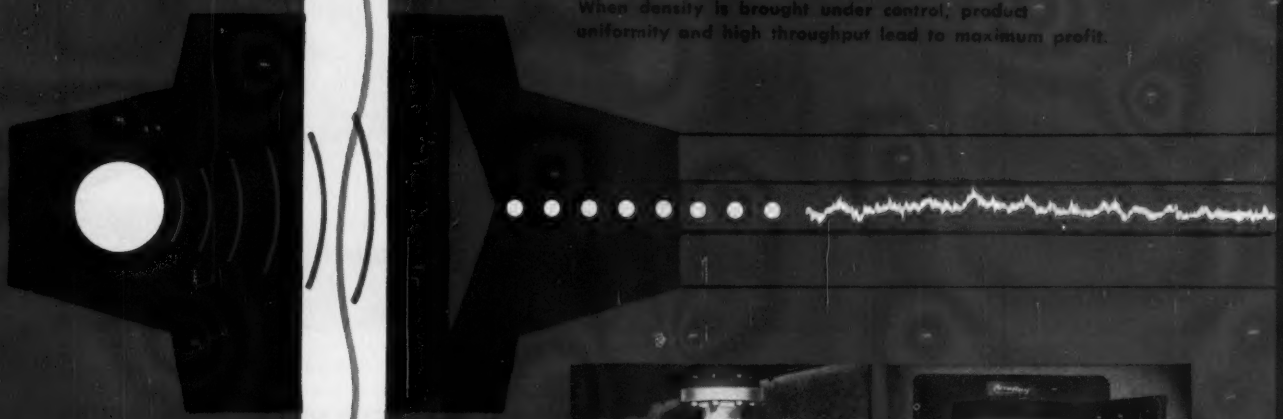
Plenty of work-whipping hustle and muscle. Your choice of two great engines—standard 145-h.p. Thriftmaster 6 or optional at extra cost 160-h.p. Trademaster V8. And truck-engineered chassis components will take all the abuse your most bruising hauls can give them!

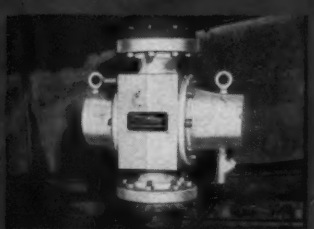
CHEVROLET **CHEVROLET TASK·FORCE TRUCKS**

AccuRay® offers continuous flow density systems

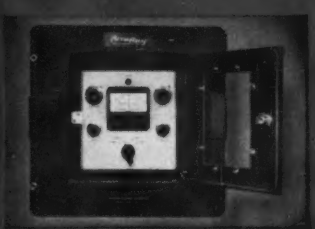
Accurately measuring liquid density, specific gravity, percent solids or related quantity, the AccuRay Density System applies nuclear radiation measurement to process control. Without contacting the process material, measurement is made continuously, independent of flow rate, pressure or viscosity. The AccuRay System is stable and rugged—designed to withstand shock and vibration under the most adverse industrial conditions.

Ideal for food processing applications, the density measuring head features an unobstructed pipe section. Sanitary requirements are met because no purges, taps, floats, or internal fittings are used. Density of feed and yield streams is easily measured in all operations where liquid materials are processed. When density is brought under control, product uniformity and high throughput lead to maximum profit.





AccuRay Measuring Head Is Easily Installed In Pipe System—Flange Connections.



The AccuRay Density Instrument visually indicates variations in fluid density—may be located remotely from measuring head.

® AccuRay is a Registered Trademark of Industrial Nucleonics Corporation

Industrial Nucleonics
CORPORATION
1161 Chesapeake Ave. Columbus 12, Ohio

Please send complete details on AccuRay Continuous Flow Density Systems

Name ..... Title .....

Company .....

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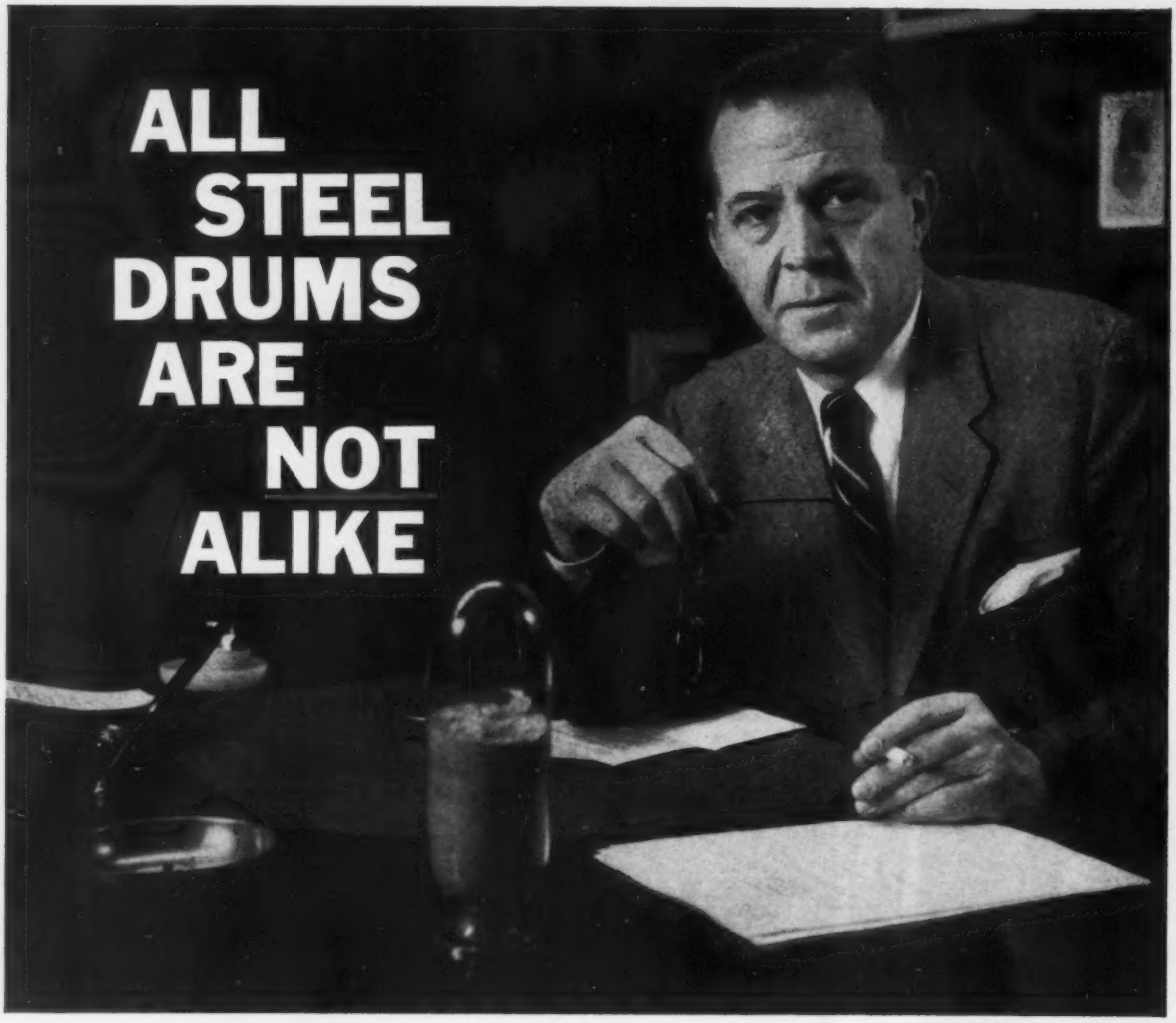
The World's Largest Manufacturer of Nucleonic Industrial Process Control Systems



Quality rust-inhibiting coatings plus two extra purchasing advantages make U. S. Steel today's best source for all your steel shipping containers

Dollar for dollar your products are protected better by U. S. Steel rust-inhibited drums. U. S. Steel chemically cleans these drums *after* they are made, then coats them with extra zinc phosphate to give maximum protection. But . . .

At the same time you are getting this maximum protection, you can capitalize on two purchasing advantages, which you get with all U. S. Steel drums and pails:

1. Full, complete line. U. S. Steel offers the widest selection of steel shipping containers on the market. From 2½-gallon pails through 57-gallon drums–plus a complete line of stainless steel containers. This allows you to fill all your needs at one time, in one place, with absolute confidence.

2. Punctual deliveries. Seven convenient plants assure you of a smooth, even flow of containers. Your normal needs are filled without stops and starts, *and* you get quicker delivery on rush orders.

Maximum protection, simplified purchasing, punctual deliveries: you get all these extras at no extra cost. Why not talk over your needs with the man from U. S. Steel?

Factories in: Los Angeles, Calif. • Alameda, Calif. • Port Arthur, Texas • Chicago, Ill. • New Orleans, La. • Sharon, Pa. • Camden, N. J.

PROOF OF U. S. STEEL PROTECTION!
Both these 55-gallon drums were weathered for 12 months. Rust appeared on the ordinary drum the first week. U. S. Steel rust-inhibited drum—coated with zinc phosphate—shows no trace of rust whatever.

USS United States Steel Products
Division of
United States Steel

SERVICE CENTER

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NEW EQUIPMENT & SUPPLIES

System Perfects Batching By Remote Control

Here's a new batching system with five advanced provisions for automatic materials handling:

Remote adjusting of weight cut-offs.

Pre-setting of several batches.

Changing batch quantity without re-setting individual ingredient weights.

Automatic weight recording.

Compensating for material between feeder and weigh hopper when cut-off occurs.

Called Remocon Controlled Batching System, it consists of one or more suspension hopper scales connected to a remote control panel. Latter has a knob, graduated in same units as scale dial, for each batch ingredient. To set up a formula, operator merely adjusts knobs to correspond to ingredient weights, thus eliminating manual settings at the scale.

System also permits pre-setting of several batches on the panel with a knob to select among them. A 'batch quantity' selector, which may be mounted on control panel, enables changing the batch size without re-setting weights of individual ingredients. Latter are automatically increased or decreased in proportion.

Unit's operation depends on matching a potentiometer on dial indicator spindle against the setting of a potentiometer connected to a knob on control panel. When the two members are electrically balanced, feeder being controlled is automatically stopped. Balancing occurs when dial spindle has rotated to weight set on knob, as a result of material being fed into scale hopper.

A compensation or "preact" control permits cutoff somewhat in advance of prescribed weight. This compensates for the falling column of material between feeder and weigh hopper. In conjunction with a two-speed feeder control (dribble feed), it offers maximum accuracy.

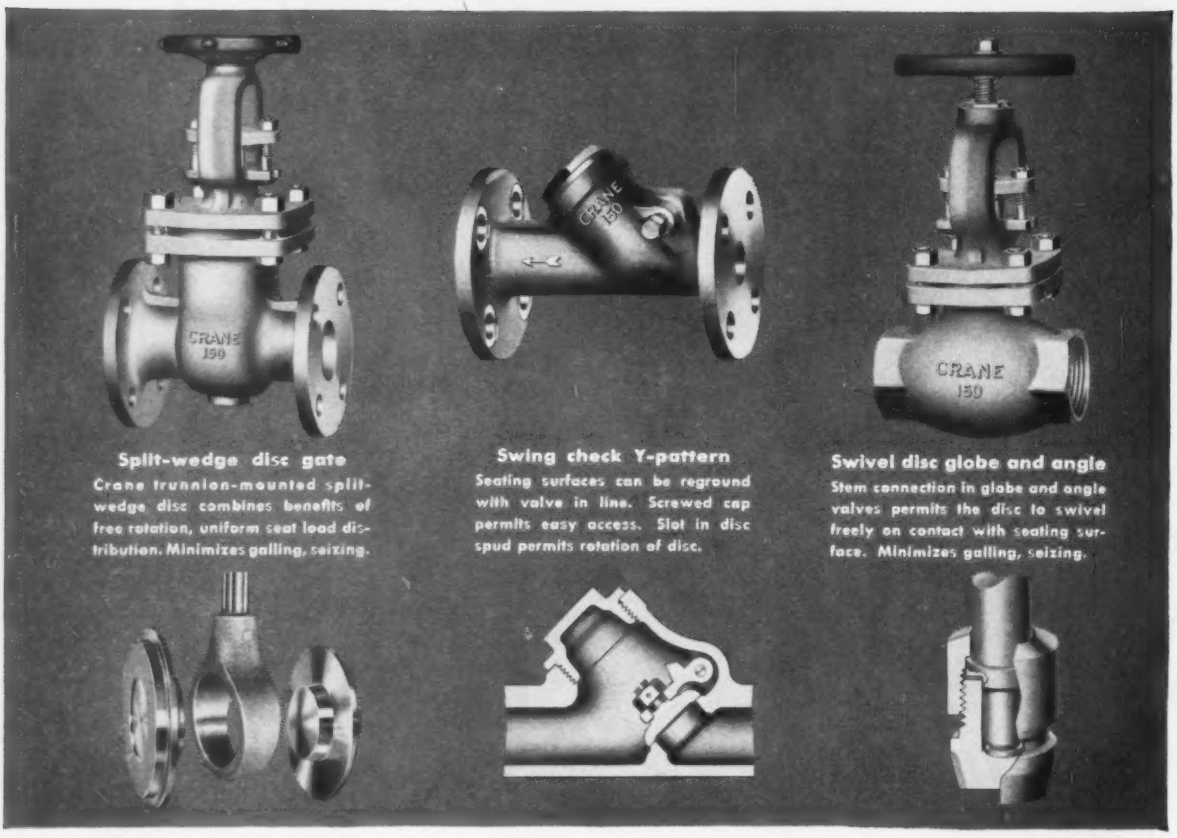
Recording devices may be used to maintain an accurate, fully identified record of ingredient weights. Total weight of batch may be recorded by special units in combination with electric adding machines or typewriters.

System also accommodates various accessories permitting a continuous check on batching. Complete interlocking can be provided, and control panel may be equipped with lights to give visual indication.—*Toledo Scale Corp., Toledo, Ohio.*

Circle 153A on Reader Service Card

ENTIRE BATCHING OPERATION is controlled from this panel, which may be remote from the weighing site. Operator is shown adjusting a knob for proper cutoff weight of one ingredient.

Cut your piping costs with CRANE corrosion-resistant valves



Split-wedge disc gate
Crane trunnion-mounted split-wedge disc combines benefits of free rotation, uniform seat load distribution. Minimizes galling, seizing.

Swing check Y-pattern
Seating surfaces can be reground with valve in line. Screwed cap permits easy access. Slot in disc spud permits rotation of disc.

Swivel disc globe and angle
Stem connection in globe and angle valves permits the disc to swivel freely on contact with seating surface. Minimizes galling, seizing.

Are your alloy valve replacement costs too high? Do you have trouble preventing product contamination?

Thousands of processors who must handle and control the flow of corrosive fluids in production have solved these problems effectively with Crane alloy valves—18-8 SMo stainless steel and Craneloy 20.

These valves, in addition to providing high resistance to corrosion and protection from product contamination, also have construction and operating features that are unequaled in cutting maintenance and installation costs.

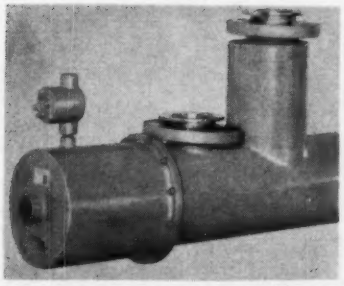
For complete information about Crane alloy valves for processing industries—application recommendations, materials, sizes, ends available, and companion fittings—write to the address below, or ask your Crane Representative.

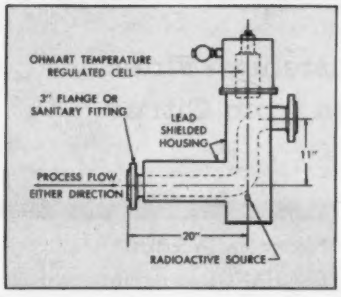
Send for Circular 2080 today.

CRANE VALVES & FITTINGS

PIPE • PLUMBING • KITCHENS • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers Serving All Areas





Gives Continuous Check Of Liquid Density

This radioactivity unit continuously and automatically gages fluid density, specific gravity, or percent solids in a liquid.

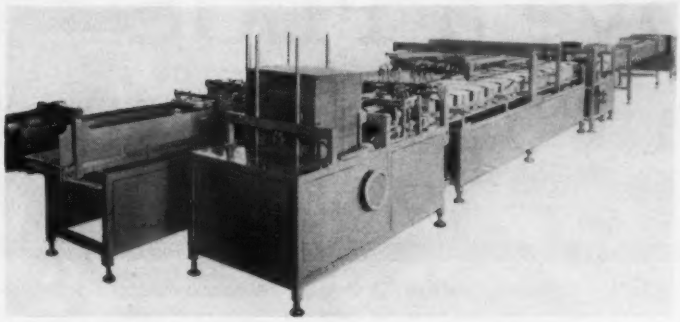
Output signals can actuate valves, pumps, or heaters in a closed-loop system to regulate density in flow processing. A typical application is density control during evaporation.

Designed for use with small-diameter pipes (diagram), unit (Model ASR-3) employs a radioactive source and a detecting cell. Latter converts radioactive energy directly into electrical energy, proportional to fluid density. Full-scale range may be as narrow as 0.05 of a specific gravity unit, precision is ±2% of range. Since there are no moving parts or contact with material being measured, gage is not affected by flow, turbulence, viscosity, or abrasion.

Unit can be made of any standard alloy with flange, welded, or sanitary fittings. It operates at temperatures to 350 F. Short-radius bends and absence of projections in the pipe prevent trapping of solids and errors in indication.

Accessories include automatic temperature compensation, recording and controlling equipment, manual and automatic multi-point switches, and multi-range measurement. Inlet and outlet pipe can be furnished with any parallel arrangement.—*Ohmart Corp., 2236 Bogen St., Cincinnati.*

Circle 155A on Reader Service Card



Speedy End-Loading Caser Cuts Costs, Guards Cans

Designed for end-loading of corrugated cases with 24 twelve-ounce cans at 700 per min., this automatic unit also offers paperboard savings of 20%. In addition, it cuts labor costs and can damage.

Known as Case Feeder-Former-Positioner-Loader-Sealer, assembly has been custom-engineered for the food industry from a design used successfully in the chemical and petroleum fields. It performs these four operations: (1) Feeds knocked-down containers into (2) a fully mechanical case-forming mechanism, from which (3) cases are positioned and end-loaded, then (4) sealed and discharged. Only one attendant is required—to load the container magazine.

Unit provides two important bulk-handling advantages. It eliminates dumping of incoming cans from bottom-glued reshippers, and manual replacement of reshipper onto case packer.

Cans travel upright (bead-to-bead) throughout the operation, thus are protected from denting, and defacing of labels or lithographed surfaces.—*J. L. Ferguson Co., Joliet, Ill.*

Circle 155B on Reader Service Card

Office Routines Simplified By Electronic Calculator

Designed primarily for invoice and order preparation, this electronic typing calculator can be programmed to automatically retain and type out total gross sales, taxes, shipping charges, and other selected accumulations for daily management review.

Simplicity of operation and ease of operator training are cited as particularly important advantages of the unit (No. 632). A typist can use the computer after a few minutes of instruction.

Calculator consists of electric typewriter, 10-key companion keyboard, magnetic-core 'memory' within the computer, and a program reader. Numerical information can be added, subtracted, multiplied, rounded off, and held in 'memory' for later processing. Instructions and decisions are contained on plastic tape within the reader. Tape can be changed for a different office procedure in a few seconds.

The typewriter, in addition to handling computer's output, may be used for general typing.—*International Business Machines Corp., 590 Madison Ave., New York City.*

Circle 155C on Reader Service Card

Want More Information?

It's free — and easy to get. Simply note here the items on which you want more details, then circle each key number (there's one given at the bottom of each item) on the handy Reader Service Postcard — back of book. Then sign at the bottom and mail. For your convenience, too, these items are listed and keyed in the Reader Service Section.

Give a PLUS to your product

Brighter Appearance • Better Texture and Consistency • Finer and Fresher Flavor with EXCHANGE Products from Citrus

Exchange Pure California Lemon Juice

Lemon juice is nature's most effective anti-oxidant. It contains many organic reductants, including ascorbic acid and a rather broad group of phenolic anti-oxidants which fall under the classification of flavonoids, sulphydryl-like compounds and possibly flavonols, which act synergistically to give lemon juice its remarkable anti-oxidant properties. It discourages the growth of microorganisms, retards enzymatic action, prevents oxidative browning, reduces the pH of low acid foods and actually possesses the ability to enhance natural food flavor in many foods such as the natural peach flavor in freestone peaches. It is prepared by Sunkist Growers especially for industry use in baby foods, low acid fruits and vegetables, canned and frozen fruits, fruit juices and nectars, mayonnaise and salad dressings, sea foods in all forms, cured meats and wherever a problem of appearance or perishable flavor exists.

Exchange Citrus Pectin— Slow Set and Rapid Set

There is one tailored to your special need. They are used by more American preservers, confectioners, and food processors than all other brands *combined*. Guaranteed by Sunkist.*

Exchange Low Methoxyl Pectin— Pectin L. M.

The *only* pectin that forms a true jell without sugar. It is the exclusive choice for aspics, jellied fruit and vegetable salads, low calorie jams, and dietetic fruit jells. Guaranteed by Sunkist.*

Exchange Pure California Orange Juice

Gives your product more of the true fruit characteristics—because it is made from California oranges, known for their richer content of ascorbic acid, amino acids, polysaccharide complexes, B complex factors, carotene (pro-vitamin A), and aromatic flavor compounds. Prepared especially for the food and beverage industry. Guaranteed by Sunkist.*

Exchange Frozen Lemon Puree and Exchange Frozen Orange Puree

Both purees of whole lemons and oranges (seeds removed) are standardized in juice acidity, sugar content and flavor. Purees give a like-fresh tangy taste to food recipes and beverage formulas. Guaranteed by Sunkist.*

Exchange Lemon Oil, U. S. P.— California Cold Pressed

Because of its clarity, uniformity and flavor intensity, it is the 10 to 1 choice over all other lemon oils sold in America. Never needs pre-testing when received in EXCHANGE-sealed containers. Guaranteed by Sunkist.*

Exchange Orange Oil, U. S. P.— California Cold Pressed

For true aromatic flavor, full color intensity and pure California flavor strength, EXCHANGE brand is the orange oil standard of the world. Guaranteed by Sunkist.*

*Guaranteed by Sunkist

EXCHANGE brand citrus products are produced and guaranteed by Sunkist Growers, Inc., representing the world's largest supplies of lemons and rich California oranges.

Every EXCHANGE brand product is made in our own ultramodern plants to the highest standards of purity, quality and uniformity.

If you would like information on how Sunkist Research may help you to improve one of your products, write to:

Section "O"

Sunkist Growers

INDUSTRY SALES DIVISION
720 East Sunkist
Ontario, California

Glass-Fiber Roof Coating Resists Wear, Weather

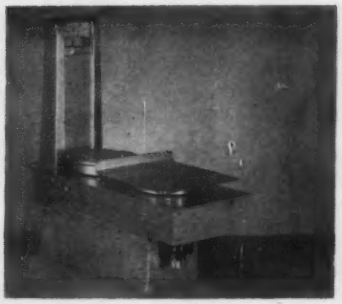
Millions of glass fibers in a new roof coating reportedly curb cold flow at temperatures to 140F.

Because flow is prevented, oxidation of more than the thin top layer is stopped. This is said to eliminate the major cause of roof leaks—evaporation of underlying asphaltic oils.

In addition, product (Fibre Glass Supercote) has special plasticizers and waterproofing oils that penetrate and resaturate dried out roofing felts. It also keeps coating from becoming brittle and provides a positive bond to old surfaces.

Coating can be applied just as it comes from the container, with roofing brush or squeegee. It is recommended for use over felt, composition, tin and corrugated iron, concrete and built-up roofs, and as a final protective coating around side walls, chimneys, parapets, sky lights, and fire walls. Material is available in 5 gal. pails, 30- and 55-gal. drums.—*The Garland Co., 3748 E. 91st St., Cleveland.*

Circle 157A on Reader Service Card



Accurate Recessed Scales Speed Checkweighing

High accuracy, portability, and ease of installation are advantages cited for a new line of under-and-over checkweighing scales.

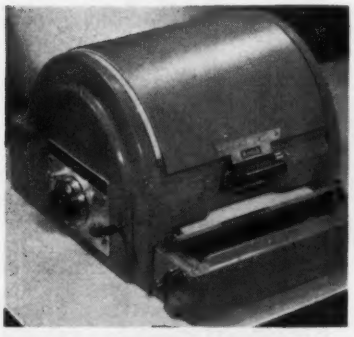
Units are recessed types that lower into oblong openings in tops of work surfaces. Unaffected by temperature variations, they may be used alternately in steam rooms and refrigerated areas.

Model 300 (left) is a single-platform, 25-lb.-capacity unit with chart and indicator under a sealed window in a horizontal cover plate. Commodity platform is raised 1 in. above top of scale. Recessed case is tapered, which permits operator to straddle scale during weighing. Selector at front of case permits fast changing of master weights.

Model 301 (right) is a 25-lb.-capacity scale with two platforms, one for master weights, the other for commodities. Both platforms are raised 1 in. above cover plate, and the end-tower is 12¼ in. above work surface.

Both models have completely sealed mechanisms, which precludes entry of dirt, dust or moisture.—*Pennsylvania Scale Co., Barreville, Pa.*

Circle 157C on Reader Service Card



Compact Unit Provides Low-Cost Copying

This 14-lb. machine offers economical office copying to the smallest organization, and cuts by one-third the cost of a decentralized, multiple-copier system for larger companies.

Known as Verifax Bantam Copier, it employs a curved glass platen that takes originals up to 8½x11 in. Unit makes up to 5 copies of any typed, drawn, written, or printed matter, at a material cost of about 2½¢ per copy. Base dimensions are 13¼x17⅞ in.—*Eastman Kodak Co., Business Photo Methods Sales Div., Rochester, N. Y.*

Circle 157B on Reader Service Card

Flowmeter Line Offers Snap-In Construction

Packing-less, snap-in measuring tubes used in this line of variable-area flowmeters have O-rings to seal tube ends to metal fittings, thus eliminating need for nuts, bolts, stuffing boxes, and packing glands.

Called Series 2700, three models cover the flow range from fraction of a cc. per min. to 40 gpm., which cuts inventory costs. Tubes are snapped in without use of tools or disconnecting and disassembling the meter. Piping strains cannot be transmitted to the tube because it 'floats' in the O-rings. Cleaning and range changing are fast and simple.—*Fischer & Porter Co., 577 Jacksonville Rd., Hatboro, Pa.*

Circle 157D on Reader Service Card

Drums' Interlocking Hoops Reduce Handling Costs

To save space and cut handling and shipping costs, these 55-gal. steel drums interlock when unitized.

Interlocking is accomplished by

when blending

FOOD PRODUCTS

at the

Nestlé Co., Inc.

DAY JUMBO MIXERS . . . meet every requirement for maintaining a thorough blend of chocolate products under sanitary conditions at The Nestlé Company, Inc., Fulton, N. Y. For instance: seals may be furnished of sanitary construction requiring no packing, and of such simple design as to permit thorough cleaning in a matter of minutes between batches—(no more black specks working into product from stuffing boxes).

Outboard bearings on all models allow plenty of room for normal cleaning and maintenance. Special agitators available for blending high shortening content products. Heating or cooling jackets, dust covers and many other optional features available. For complete information write for Bulletin 800.

FOUNDED 1887

in mixing equipment **DAY** *means longer life span*

THE J. H. DAY COMPANY

4924 BEECH ST., NORWOOD, CINCINNATI 12, OHIO

Division of Cleveland Automatic Machine Company

Quality equipment for baking, paint and varnish, printing ink, chemical, rubber, pharmaceutical, cosmetics, paper and pulp, explosives, food, ceramics, candy, soap, sugar and milk products.

specially designed rolling hoops, slightly offset (alternately raised and lowered) on opposite sides of drum. When unitized, a group of drums can be handled without pallets by lift truck.

Transit damage is reduced because containers (Uni-Drums) contact each other at their six strongest points, curbing dents and deformation. Also minimized are rotation, vertical movement, and loosening, which often cause surface damage.

Drums roll only on the hoops, can be reconditioned, and readily intermixed with standard containers. Units are available with a variety of closures, accessories, and sanitary or corrosion-resistant linings.—*Vulcan Containers, Inc., P. O. Box 161, Bellwood, Ill.*

Circle 157E on Reader Service Card

Unit's Piston Action Speeds Filling of Cottage Cheese

This sanitary semi-automatic filler discharges 8-16 oz. of cottage cheese with every half-cycle of its filling cylinder, thus enables packaging speeds to 46 containers per min.

Called Model 377, it employs a double-action piston that simultaneously fills the container and readies the cylinder for the next cup. Two 'free-falling' piston heads, joined by an adjusting screw, are easily set for exact discharge. And for uniform fill, unit has an auxiliary power-driven ram that empties the cylinder.

The large stainless-steel hopper holds up to 160 lbs. of cheese, and machine comes equipped with pedestal stand and casters. Cycles are actuated by a conveniently located

THEY *get to take a last look inside*

Standard Oil research develops method for inspecting lubrication of enclosed parts without disassembling

What if you had to make a final inspection of enclosed parts to be sure they were lubricated and you could not do it without disassembling? Standard Oil research scientists have just developed an instrument system that determines lubricant level in an instant. The device measures the density of an assembly so precisely the presence or absence of the desired quantity of lubricant registers on a meter.

Having such a unit might permit you to shorten an assembly line or reorganize assembly operations for greater convenience, speed, economy. The research men at Standard who developed this inspection method will be glad to share their know-how with you to help you fit it to your assembly operations.

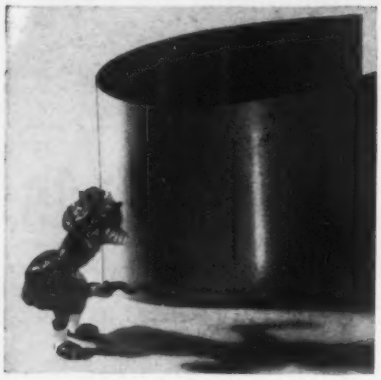
This is the research pay-out you get from Standard. This is the "something more" Standard gives to industry besides the research which has established Standard Oil petroleum products as the industry criteria for quality.

For more information about this development or for assistance on other lubrication problems, inquire of any of the 48 Standard Oil district offices in the 15 Midwest and Rocky Mountain states. Or write **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**

You expect more from **STANDARD** *and get it!*

No matter which *FINISH* you like—you can buy it in

MicroRold® QUALITY STAINLESS STEEL

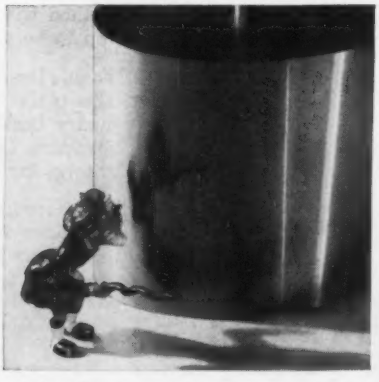


2D—A silvery white, but non-lustrous, surface produced by annealing and pickling cold reduced material. Steel sheets & strip in this condition are most ductile and the surface holds lubricant well for severe drawing operations.

2B—Steel in the 2D condition which is subsequently rolled on a "skin pass" or temper mill. The surface acquires a bright finish from the polished rolls. This surface is somewhat more dense and hard than 2D and is a better starting surface for later finishing and buffing operations.

No. 3—This surface is made by grinding with a No. 100 abrasive. This surface is smooth but not as reflective as 2B.

No. 4—A finer finish than No. 3 made by grinding with a No. 150 abrasive. Like No. 3, this surface is easily blended with hand grinders after forming, drawing or welding.



No. 7—Good reflectivity and brilliance made by polishing with a No. 400 abrasive. This semi-mirror finish must be protected during fabrication by adhesive paper or strippable plastics lest the finish be marred beyond repair.

BRIGHT—A highly reflective surface made by cold reducing with highly polished, glass-hard rolls. This finish is only available in Type 430 stainless.

These are our standard surface finishes that are available in types 201, 202, 301, 302, 304 and 430 except Bright which is type 430 exclusively.

These finishes are regularly supplied in sheet and coil form in widths up to 48 inches.

Since Nos. 3, 4, 7 and 430 Bright are smooth reflective surfaces, they are not recommended for severe drawing without special precautions as the mill finish may be marred. Applications such as dairy machinery, kitchen and restaurant equipment and architectural decorative work require only local forming, so these highly polished surfaces are not greatly disturbed. All mill polished sheets are carefully packed to avoid handling imperfections. Protective adhesive paper can be specified by the buyer when needed.

For specific information on recommended surface characteristics for a particular stainless steel sheet and strip application, address your request to our Product Development Dept.

WASHINGTON STEEL CORPORATION — MicroRold — STAINLESS — SHEET & STRIP

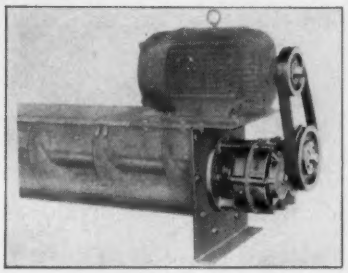
Washington Steel *Corporation*

Producers of Stainless Sheet and Strip Exclusively

4-W WOODLAND AVENUE, WASHINGTON, PA.

foot pedal, which frees operator's hands for filling.—*Anderson Bros. Mfg. Co., 1907 Kishwaukee St., Rockford, Ill.*

Circle 158A on Reader Service Card



Design Innovations Offered By Screw-Conveyor Drive

Easily mounted and adjusted on standard conveyor troughs, this screw-conveyor drive reportedly embodies a new concept in application and several advance design features.

Unit consists of speed reducer with packing gland and driving shaft, which mounts on trough end.

Maximum efficiency is obtained from use of heat-treated helical steel gears and pinions. Bearings provide ample thrust and radial capacity, and seats are bored in line for long bearing life.

Drive design protects reducer against entry of material being handled. Packing gland is adjustable from outside, takes standard packing, and may be visually inspected. A flinger seal on shaft next to reducer also prevents any foreign matter from reaching seals.

Slotted holes in the reducer flange permit rotating the unit for quick and easy adjustment of the V-belt drive center distance. Motor and drive may be mounted in any position. Tapered roller bearings in reducer eliminate need for a separate thrust bearing. Former take thrust in either direction.

Reducer with packing glands and driving shaft may be easily mounted or removed from trough end by means of three bolts in reducer flange. Driving shaft is mounted in a steel sleeve, and a built-in puller facilitates its changing without opening the reducer itself.

Drives are available in four sizes, each in two ratios—18:1, 8:1—*Dodge Mfg Corp., Mishawaka, Ind.*

Circle 161A on Reader Service Card

VIKING PUMPS IT!

You can avoid messes, when moving sticky, viscous liquids . . . you can save time . . . and cut costs — all by using Viking Pumps.

Vikings are pumping thick liquids with outstanding results for thousands of users . . . and will for you, too. The positive action of the famous "gear-within-a-gear" is Vikings' secret of success.

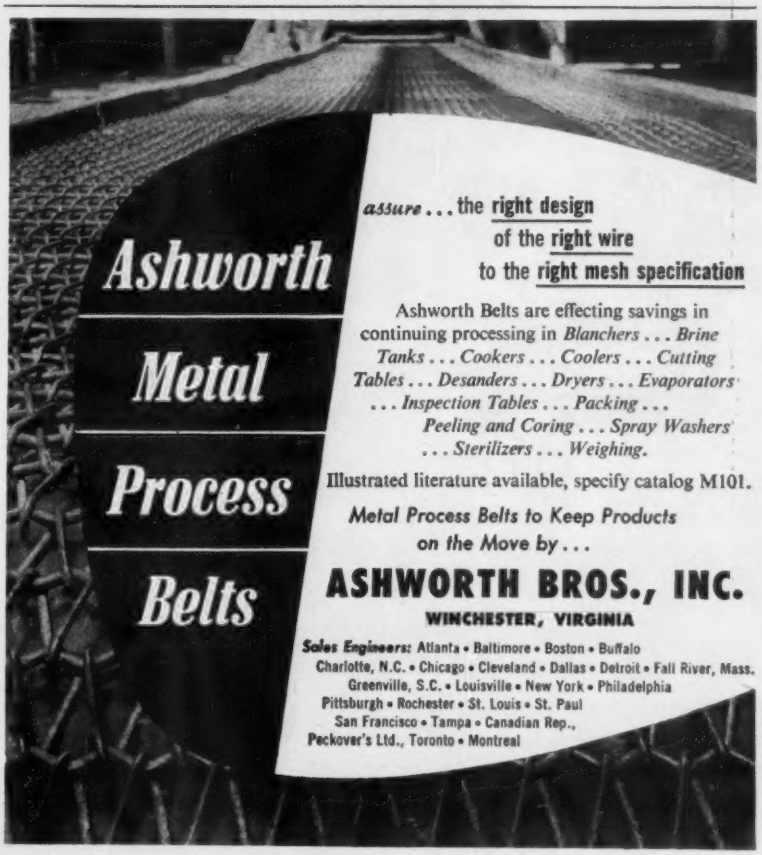
You'll find Viking Pumps for most industrial needs. Sizes from ⅔ to 1050 gallons per minute. Over 750 catalogued models. Hundreds of special designs for individual problems.

Send us your problem — ask for folder 58 SE

VIKING — the leader, not a follower, in Rotary Pumps

VIKING PUMP COMPANY
Cedar Falls, Iowa, U.S.A. In Canada, it's "ROTO-KING" pumps

See Our Catalog in Sweet's Plant Engineers File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Belts
assure . . . the right design of the right wire to the right mesh specification
Ashworth Belts are effecting savings in continuing processing in Blanchers . . . Brine Tanks . . . Cookers . . . Coolers . . . Cutting Tables . . . Desanders . . . Dryers . . . Evaporators . . . Inspection Tables . . . Packing . . . Peeling and Coring . . . Spray Washers . . . Sterilizers . . . Weighing.
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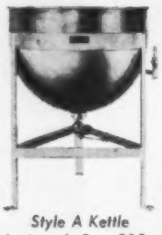
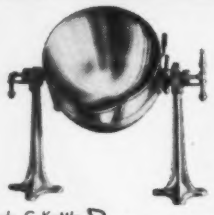
LEE *Corrosion-Resistant* PRODUCTS

For Reduced Processing Costs

Style CW Kettle
⅔ Jacketed, 80 to 300 gal.

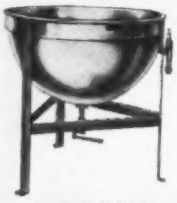


Style A Kettle
⅔ Jacketed, 5 to 500 gal.

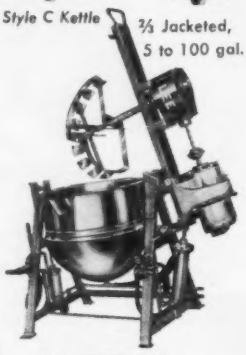


Style C Kettle
⅔ Jacketed, 5 to 100 gal.

Pressure Kettle
⅔ Jacketed, 40 to 200 gal.

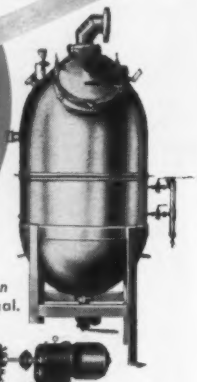


Style B Kettle
Full Jacketed, 10 to 300 gal.

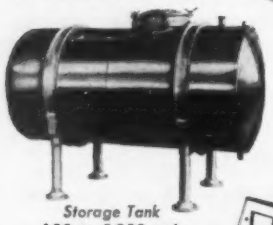


Style CW3T Kettle
with Center-Line Scraper Agitator, 80 to 300 gal.

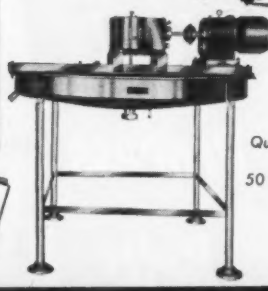
Pulp Tank
500 to 2,000 gal.



Vacuum Pan
30 to 500 gal.



Storage Tank
100 to 5,000 gal.



Quick Cooling Pan
50 to 200 gal.

Write for bulletins on any of the products illustrated.

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METAL PRODUCTS COMPANY, INC.
ALL LEE KETTLES ARE MADE TO A.S.M.E. CODE.

Kettles, Plain and Jacketed | Tanks, Processing and Storage | Agitators and Accessories | Vacuum and Pressure Equipment

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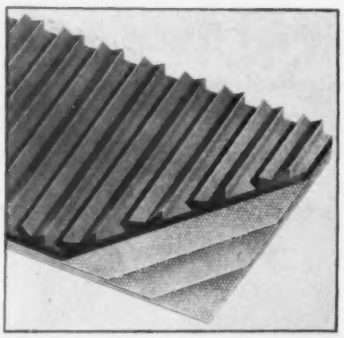
Equipment & Supplies



Belting's Flexible Ribs Grip Cartons on 45-Deg. Slope

Designed for package conveyors, this cross-corrugated belt is said to be particularly effective on steep inclines.

Ribs of unit (Ridgetop) deflect under load to provide a firm grip on packages moving up a 45-deg. incline. This permits shorter conveyor flights, and saves floor space when cartons go between floors.

The cover compound is a resilient, tough rubber that doesn't harden with age. This construction is also available in Neoprene to resist oil and grease.

Belting is offered in widths to 48 in., and of 28- or 32-oz. cotton duck. Minimum top-cover thickness is ⅛ in., and units have a friction-surfaced back.—*New York Rubber Corp., 100 Park Ave., New York City.*

Circle 162A on Reader Service Card

Steel Jacket Ups Strength Of Resistant PVC Pipe

Combining the strength of steel with chemical resistance of plastic, this new pipe is expected to find wide application where corrosion is

What can distilled monoglycerides do for these foods?

When you take a reaction mixture of mono- and diglycerides and use molecular distillation to produce a monoglyceride emulsifier of exceptional purity, some wonderful things can happen. For example:

In dessert toppings—with *Myverol® Distilled Monoglycerides* you can make ordinary homogenized milk whip up into a lovely whipped product with good texture and overrun. With vegetable-oil-based toppings, you can use *Myverol* to give you the high overrun and low whipping time you seek.

In ice cream—*Myverol*, along with an appropriate stabilizer, can be used to control overrun, produce a product with excellent dryness and melt-down. It works as well in vegetable-based frozen desserts as it does in dairy-based products.

In many, many other foods, too, *Myverol* gives you product and processing advantages you may be missing.

Myverol Distilled Monoglyceride emulsifiers are available in a number of types made from most common fats and oils. The only problem is which type, or combination of types, will best help do the job you want. We're ready to go to work with you on this or supply samples for you to work with yourself. To get started, write ***Distillation Products Industries,*** Rochester 3, N. Y. Sales offices: New York, Chicago, and Memphis • W. M. Gillies, Inc., West Coast • Charles Albert Smith Limited, Montreal and Toronto.

distillers of monoglycerides made from natural fats and oils

DPi

Also . . . vitamin A in bulk
for foods
and pharmaceuticals

Distillation Products Industries *is a division of* **Eastman Kodak Company**

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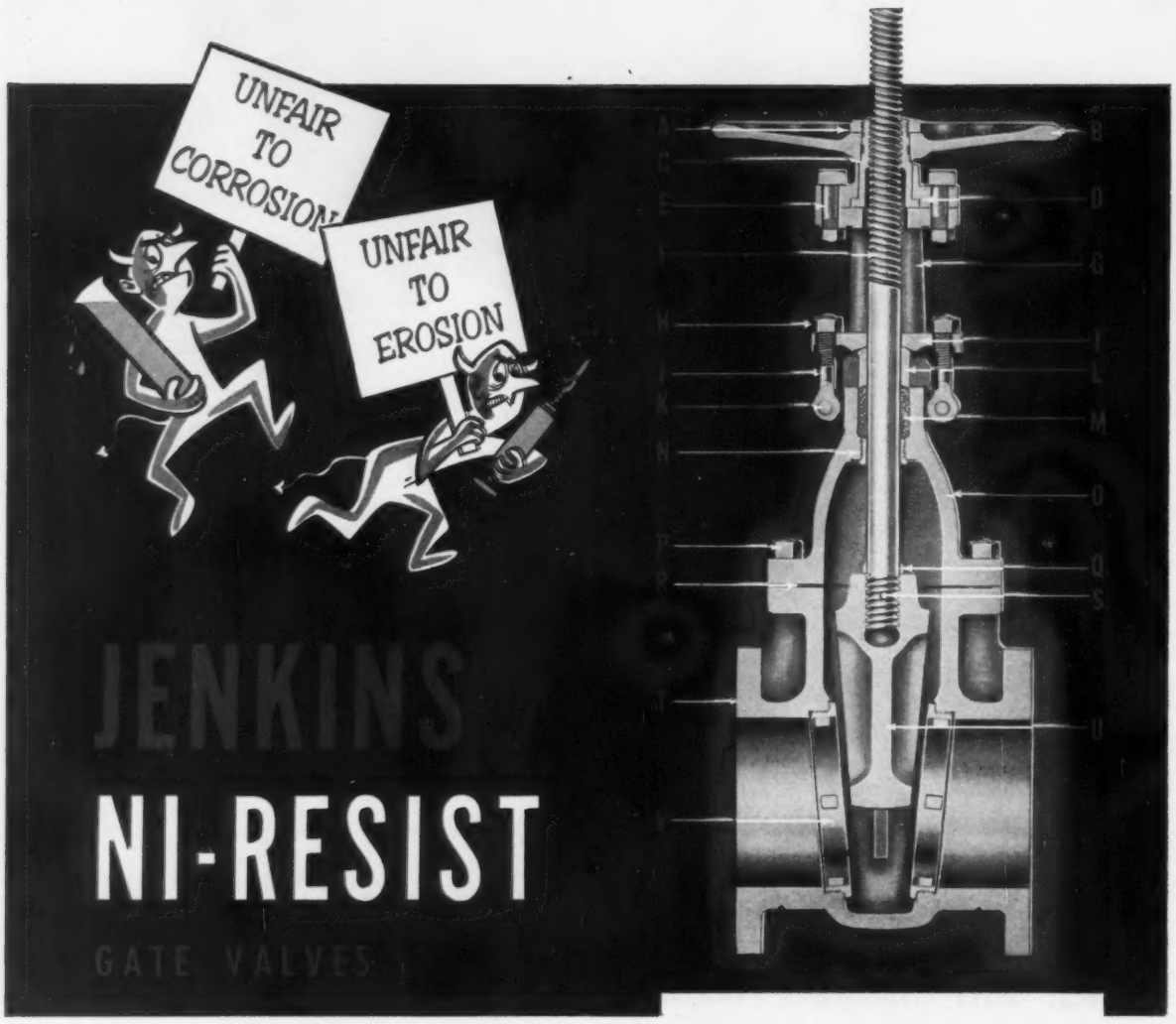

A Bronze yoke bushing nut
B Handy grip iron wheel
C Bronze yoke bushing
D Iron yoke cap with zerk fitting for lubricating bushing
E Steel yoke cap bolts and nuts
F TYPE 316 STAINLESS STEEL spindle
G NI-RESIST CAST IRON, TYPE 2, yoke
H Bronze eye bolt nuts
I Malleable iron gland flange
J Steel gland eye bolts
K Steel gland lug bolts and nuts
L TYPE 316 STAINLESS STEEL gland
M Teflon impregnated asbestos packing
N TYPE 316 STAINLESS STEEL bonnet bushing
O NI-RESIST CAST IRON, TYPE 2, bonnet
P Steel bonnet bolts and nuts
Q TYPE 316 STAINLESS STEEL spindle ring
R Asbestos gasket
S TYPE 316 STAINLESS STEEL wedge pin
T NI-RESIST CAST IRON, TYPE 2, through-port body
U TYPE 316 STAINLESS STEEL solid I-beam wedge
V TYPE 316 STAINLESS STEEL seat rings

Wherever valves are attacked by acids, salt and alkaline solutions, sea water, brine or other corrosive fluids, vapors or gases, "Jenkins Ni-Resist Gate Valves" are *fighting* words.

In a wide range of corrosive and erosive services common to the chemical, food, plastics, marine, petroleum, and pulp and paper industries, these valves have shown a remarkable ability to withstand corrosion and cut valve costs.

The secret of their long, trouble-free service is the combination of Ni-Resist type 2 cast iron and type 316 stainless steel trim, plus Jenkins *extra value* construction throughout. No other gate valves offer this combination for fighting corrosion.

When choosing Ni-Resist valves, let the famous Jenkins Diamond be your guide. Specify "JENKINS NI-RESIST" — for longer valve life. Write us, or ask your Jenkins Distributor for information folder No. 205. Jenkins Bros., 100 Park Avenue, New York 17.

JENKINS
LOOK FOR THE JENKINS DIAMOND
VALVES
JENKINS
SINCE 1864
Jenkins Bros

Sold Through Leading Distributors Everywhere

a particular problem to processors.

Known as "Jal-Jacket", it consists of a rigid polyvinyl chloride (PVC) tube jacketed with welded steel pipe. PVC was chosen as liner material because of its excellent resistance to corrosion. Use of a steel jacket overcomes the pressure limitation of most plastic pipes. Working pressures of 1,000 psi. at 150 F. are easily attained.

Pipe will be available in 20 ft. mill lengths in 2-, 3- and 4-in. nominal o.d.—*Jones & Laughlin Steel Corp., 3 Gateway Center, Pittsburgh.*

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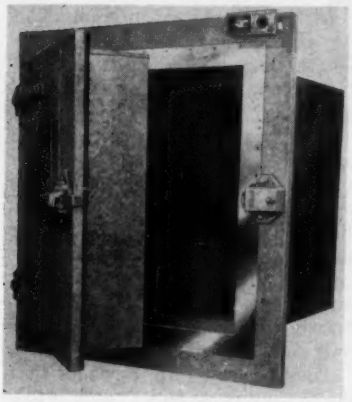

Low-Temp Passing Tunnel Curbs Refrigeration Loss

In transferring packages to or from rooms operating at +15F. to −30F., refrigeration loss may be minimized with use of a new passing door and tunnel.

Known as Lo-Temp, unit provides an airlock for packages. Tunnel has overlapped strip-rubber curtains, vapor-tight metal doors, and a special heater (Frostop). Latter is a thermostatically-controlled heating cable that prevents ice build-up on gasket contact areas of door frames and sills.

Curtain allows unrestricted passage of packages in and out of tunnel, yet opens only wide enough to permit package to enter. As package is pushed through the curtain, rubber strips form a wiping seal on both sides and top. Provision can also be made for use of conveyors (gravity roller, power chain, or power belt) with this unit.—*Jamison Cold Storage Door Co., Hagerstown, Md.*

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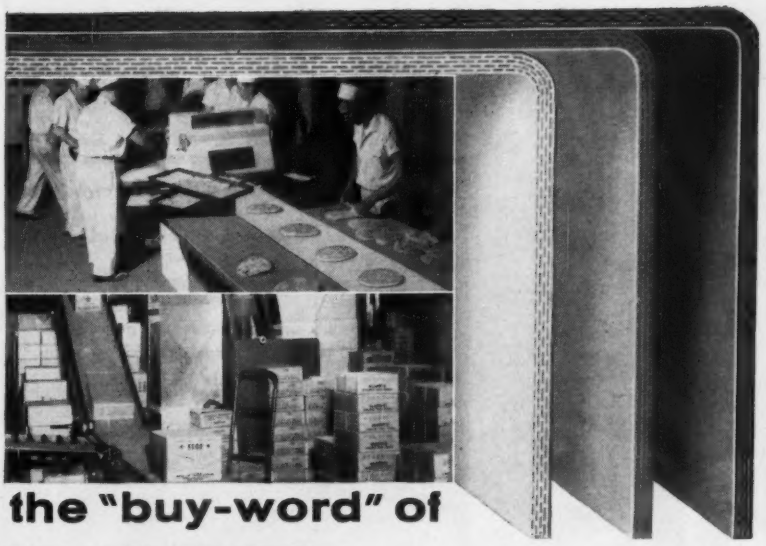

the "buy-word" of

THE FOOD INDUSTRY

GLOBE *Neoprene* BELTING

No wonder Globe Neoprene Belting is on the lips of every outstanding food processor. It insures protection of foods and your firm's good name whenever you have a problem of conveying, elevating or transmission.

GLOBE WHITE NEOPRENE withstands food oils, cooking oils, fats, greases, acids, alkalis, and practically everything that harms ordinary belting. Food particles can't cling to its tough, durable, but satin-smooth cover that cleans with a quick wipe of a damp cloth and STAYS clean. It absorbs no odor, flavor or taste and NEVER gets rancid. Any width up to 48-inches and in 2 to 6 ply construction.

GLOBE BLACK NEOPRENE — with the same construction features — for conveying boxes, cans, crates, canned or bottled goods.

GLOBE ROUGH SURFACE NEOPRENE — White, "Ruff Top" or brown "Kling Top" for incline or decline conveying of foods.

MANUFACTURERS OF:

WHITE SOLID WOVEN COTTON BELTING • PRESS-CURED KANRY-TEX BELTING WATERPROOF AND WAX TREATED BELTING • HYCAR BELTING • NEOPRENE BELTING • PLASCELL BELTING • CELLULOSE BELTING • STITCHED CANVAS BELTING • ROUND BRAIDED ENDLESS BELTS • HEVALOID ENDLESS BELTS WOVEN ENDLESS BELTS • CLEANER AND SIFTER BRUSHES • WEBBINGS HOISTING SLINGS • BELT DRESSING

When you need belting, call a Globe engineer.

GLOBE WOVEN BELTING CO., INC.

1400 CLINTON STREET • BUFFALO 6, NEW YORK

KNOWN FOR QUALITY THE WORLD OVER

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CUT COSTS WITH SEALTITE

- Delivers a well settled, nicely squared bag at top, bottom and sides
- Pre-scored, double fold, uniformly glued seal keeps product in and dirt out
- Uses any standard make of gusseted bag — no royalties
- Seal readily opened, yet tamper-proof
- Seals 30 to 50 bags per minute
- Users report costs reduced up to $500.00 per month per machine

Write for complete information

CONSOLIDATED PACKAGING MACHINERY CORP.

BUFFALO 13, NEW YORK

From One Engineer To Another...

Case Histories Available on:

- APPLE JUICE
- APRICOT JUICE
- BABY FOODS
- BARB'Q SAUCE
- BEER
- CITRUS JUICES
- COFFEE (soluble)
- Concentra'd Juice
- Cranberry Juice
- EDIBLE OILS
- EGG (liquid)
- GELATIN
- GRAPE JUICE
- GRAVY
- HONEY
- ICE CREAM MIX
- LARD
- MILK
- MOLASSES
- ORANGE JUICE
- PECTIN
- PIE FILLINGS
- PICKLE BRINE
- PINEAPPLE Juice
- PRUNE JUICE
- SOFT DRINKS
- SOUPS
- STARCH PASTE
- SUGAR SYRUPS
- TOMATO JUICE
- TOMATO PASTE
- VEGETABLE OIL
- VINEGAR

and many others

THICK SUGAR SYRUPS presented

A SWEET PROBLEM!

We must pasteurize thick viscous sugar syrups in a continuous process with positive protection of quality and delicate flavors.

Enter the APV ENGINEER . . .

with the combined knowledge gained from many years of experience in serving the worlds largest food and juice processors.

SOLUTION:

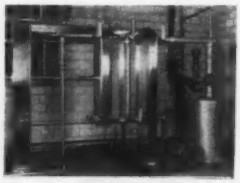
Use APV Flash Pasteurizer . . . handles any concentration of flavored syrup, simple syrup, fruit beverage or juice . . . produces a sterile product, protected against reinfection. No possibility of overheating delicate flavors. Self-cleaning stainless Paraflow plates resist fouling. *Unequalled* high efficiency.

Q.E.D.

PARAFLOW Plate Heat Exchangers

- Protect Flavor
- Guarantee Sterility
- . . . . at LESS COST
- . . . . in LESS SPACE
- . . . . in Continuous Flash

Pasteurizing and Chilling Systems



APV **PARAFLOW** SERVES THE WORLD'S LEADING FOOD AND JUICE PROCESSORS

Write for descriptive folder F-57

APV COMPANY, INC.

137 ARTHUR ST. BUFFALO 7, N. Y.

Equipment & Supplies

Versatile Floor Machine Ups Operating Efficiency

Employing a 23-in. brush spread, this streamlined floor machine offers top performance in a variety of jobs —scrubbing, polishing, buffing, dry-cleaning, sanding, and refinishing of any surface.

Known as KC-22, it provides an adjustable handle that swivels for space-saving storage, for height of any operator, and for pivotal operations. The two 6-in. wheels have semi-pneumatic tires, and the rubber cord is non-marking. A rubber bumper protects furniture and baseboards. A special safety switch permits right- or left-hand operation.

Powered by a 1-hp. capacitor start motor, unit is quiet and easily handled.—*General Floorcraft, Inc., 421 Hudson St., New York City.*

Circle 166A on Reader Service Card

INGREDIENTS

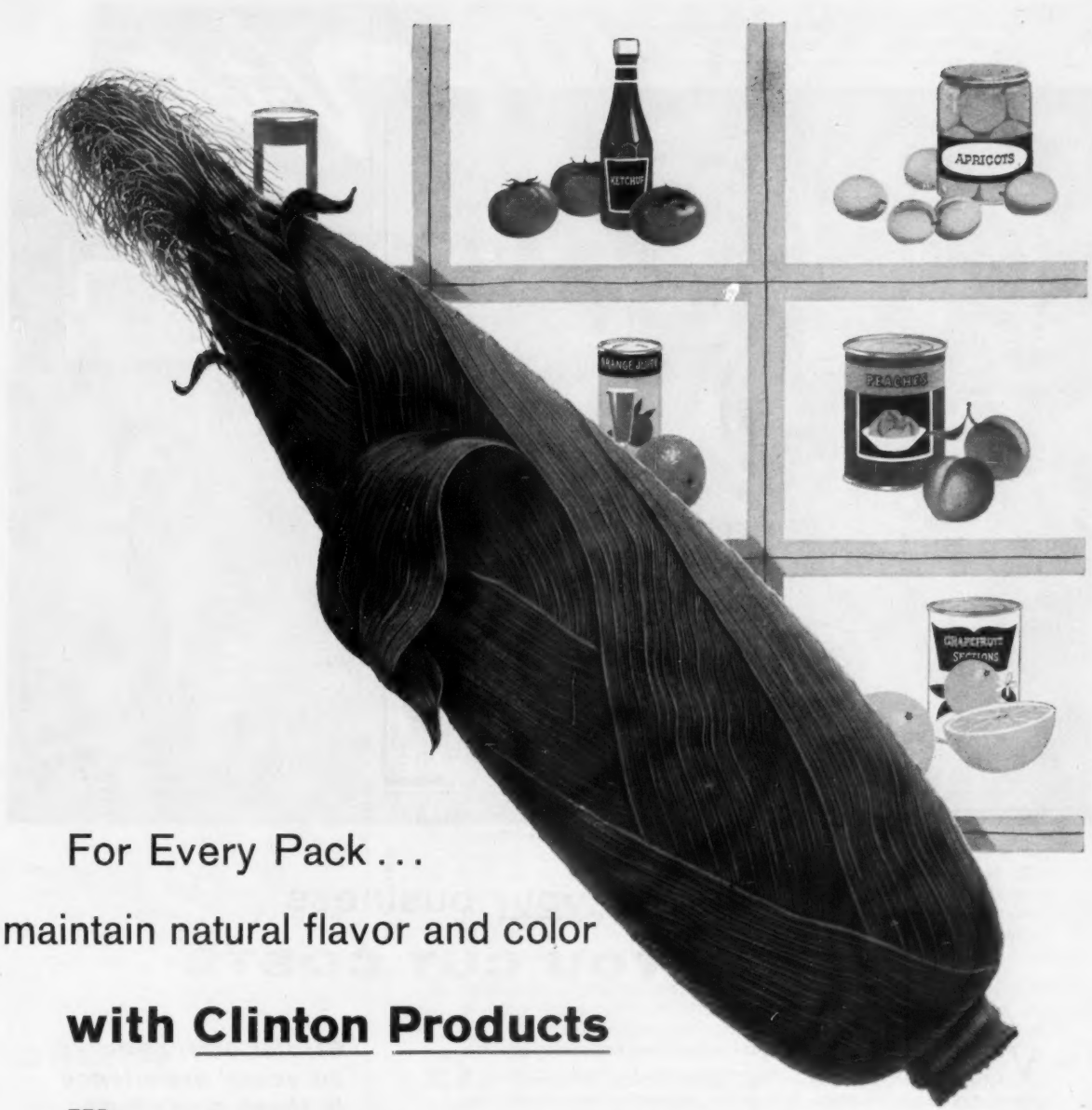
New Thickener Ups Quality Of Canned Frozen Foods

High stability, neutral taste, and excellent clarity are advantages cited for an improved thickener.

Known as Col-Flo 67, the cornstarch product is recommended for all items incorporating a thickener, especially canned and frozen foods having a gravy base, prepared pie fillings, and tomato-base sauces.

Material does not retrograde, is unaffected by freeze-thaw, and does not require agitation to reblend when heated. Product is available in 100-lb. bags.—*National Starch Products, Inc., 270 Madison Ave., New York City.*

Circle 166B on Reader Service Card



For Every Pack . . .

maintain natural flavor and color

with Clinton Products

WHATEVER your packing problem, you can enhance the natural flavors and colors of fruits, preserves or vegetables in every pack. For each case there's a just-right corn syrup (dry or liquid) and *Clintose*® dextrose that you can rely on for uniform results every time, because:

CONSISTENT FORMULATION MAKES CLINTON PRODUCTS RELIABLE

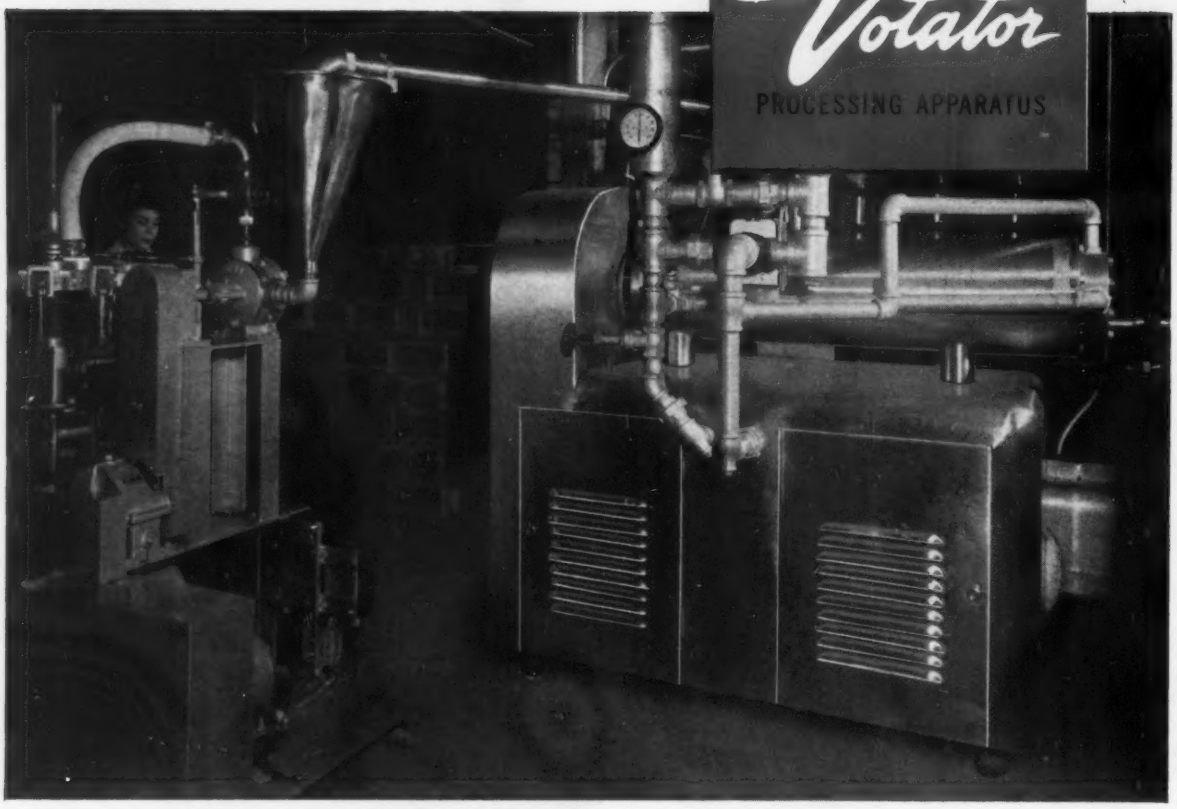
Three analytical control laboratories and several single-purpose testing stations are located at strategic points in our plant. They check every stage in the processing of *all* products . . . they check *all* finished products to be sure specifications are met exactly. That's why you can depend on Clinton products to do the job for which they are needed.

Your Clinton salesman can help you select the right products to give your pack the properties you want. And, should you need special production advice, *prompt* technical service is available when you need it. Call your Clinton salesman today, or write:

CLINTON CORN PROCESSING COMPANY
CLINTON, IOWA

CLINTON *. . . Where research today improves tomorrow's product*

Installation of VOTATOR Processing Apparatus at Bell Brand Foods, Ltd., Los Angeles. It makes a more salable peanut butter at lower cost.



30 years in your business

TO HELP YOU CUT COSTS

VOTATOR* Heat Transfer Apparatus has been improving heating, cooling, mixing and aerating operations in food processing plants more than 30 years. This broad experience can help you cut costs and upgrade quality with these important benefits:

Continuous processing. Violent agitation, combined with continuous scraping of heat transfer area, produces clean surface and high turbulence. Continuous flow results in high throughput rates in small production space.

Peak efficiency. High viscosity, suspended solids, heat-sensitive or work-sensitive materials—all are processed in a matter of seconds.

Upgrades quality. Replaces operator judgment with automatic controls to assure uniformity of finished product. Completely enclosed processing system safeguards quality.

Engineering assistance. Girdler's nationally-known engineers and chemists, equipped with outstanding research and pilot plant facilities, are available to help you in the planning for modernization or new plant facilities. Call our nearest office.

*VOTATOR—Trade-Mark Reg. U. S. Pat. Off.

Girdler offers you 30 years' experience in these processes

Cooling	Aerating
Enzyme Inactivation	Plasticizing
Crystallizing	Cooking
Sterilizing	Pasteurizing
Slush Freezing	Mixing
Chilling	Whipping

to improve your production

GIRDLER

PROCESS EQUIPMENT DIVISION

NATIONAL CYLINDER GAS COMPANY

Louisville 1, Kentucky

Manufacturers of VOTATOR and THERMEX Processing Apparatus

Sales Offices: Louisville, New York, Chicago, Atlanta, San Francisco

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Totally Soluble Phosphate Ups Quality of Hams

Higher yields of better-colored, jucier hams are reported with use of a new phosphate formulation, completely soluble in finished brine.

Product (Solphos) is approved for use in federally inspected plants. Recommended level is 1 lb. per 5 gal. water.—*Meat Industry Suppliers, Northfield, Ill.*

Circle 169A on Reader Service Card

CHEMICALS

Plant Sanitation Simplified By Germicidal Cleanser

This potent germ-killing agent reportedly is unique in that it also has excellent detergent properties, unusual since sanitizers generally are hindered when used along with detergents.

Known as PC-6, it has a phenol coefficient of 6 and retains potency when diluted with up to 120 parts of water. Product is recommended for low-cost sanitizing and cleaning of tile floors, painted surfaces, and washroom facilities. It is safe on the skin, rinses film-free and leaves a fresh-air odor.—*Penetone Co., 74 Hudson Ave., Tenafly, N. J.*

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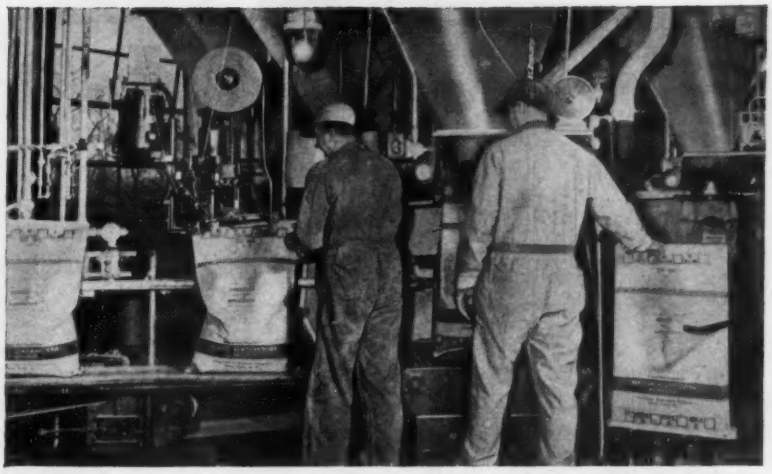
BRIEFS

New Color-Printing Technique offers economical production of 8½x11 in. promotional literature—catalog sheets, salesmens' samples, mailers, etc. Printings include full-color illustration and 20 lines of copy.—*Brate's Printing Office, Inc., 65 Hudson Ave., Albany, N. Y.* (169C)

Compact Flange-Type Motor employs formed end coils and one-piece bracket to reduce its length up to 60% over standard units of same rating. Air-gap motor (Pancake) is available in 1-15 hp. ratings at 1,800, 1,200, and 900 rpm.—*Louis Allis Co., 427 E. Stewart St., Milwaukee.* (169D)

Multi-Purpose Floor Unit enables high-speed scrubbing and damp-drying, or polishing and vacuuming of



Richardson recommends
4 WAYS TO SAVE
WASTED BAGGING DOLLARS

1. **Minimize Weight Give-Away.** Frequently, you're forced to set mean bagging weights high, to prevent falling short. With an inaccurate scale, you can lose more than $10 an hour through weight variations—especially when bagging at high speeds. Many processors have solved this problem by installing Richardson bagging scales. With average accuracy of ± 1 to 2 oz. or better, they prevent overweights and underweights, year after year.
2. **Spend Less for Bags.** You may be paying good money for nothing but "air space" in filled bags. A Richardson G-73 Impacker can end this waste. The Impacker is a simple, compact accessory that quickly "shakes down" material as it fills bags. Thus, you can pack any given quantity into smaller, neater bags. The money you save—on bag size alone—can bring you profits well beyond the cost of this equipment.
3. **Speed Up Production.** Example: the Duplex Richardson E-50 Bagging Scale can turn out twenty 100-lb. bags per minute. It's only one of many Richardson models for handling flour, sugar, rice, feed, and chemicals, in bagging ranges of 25-250 lbs.
4. **Cut Excessive Labor Costs.** Are your bagging operations overmanned? Some installations require expensive standby labor. You can cut out this cost—sometimes as much as one-third of regular labor costs—and free labor for productive work, by installing *automatic* Richardson bagging equipment. Time and labor-saving accessories include automatic feeders, sewing conveyors and pedestals, bag-holders, as well as packers like the Impacker described above. Low-cost automatic proportioning systems are Richardson specialties, too. Simple design makes maintenance easy. Any maintenance man can understand a Richardson. And, *only* Richardson maintains a nationwide service organization that can serve you *within 24 hours,* if necessary.

Richardson Scales conform to U. S. Weights and Measures H-44 for your protection.

FOR MORE INFORMATION ON RICHARDSON BAGGING SCALES, WRITE TODAY TO

Richardson
MATERIALS HANDLING BY WEIGHT SINCE 1902

RICHARDSON SCALE COMPANY • CLIFTON, NEW JERSEY
Sales and Service Branches in Principal Cities
Also manufactured in Europe to U.S. standards

1206

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AUTO-LITE

Temperature Indicators for REMOTE READING

Model F-1 temperature indicators are widely used in the chemical and food industries to cut waste and help preserve quality standards in processing and storage. Ideal for installation on any equipment where accurate temperature is desired.

Solid liquid-filled movement . . . Large, easy-to-read dial . . . Equipped with 3-way adjustable bracket . . . Flexible tubing for remote reading or rigid stem for direct mounting . . . Wide choice of standard temperature ranges, from minus 60°F to plus 750°F. From $23.50.

THE ELECTRIC AUTO-LITE COMPANY
INDUSTRIAL INSTRUMENT DIVISION
TOLEDO 1, OHIO
NEW YORK • CHICAGO • SARNIA, ONT.

Send for New Catalog

TEMPERATURE INDICATORS AND RECORDERS

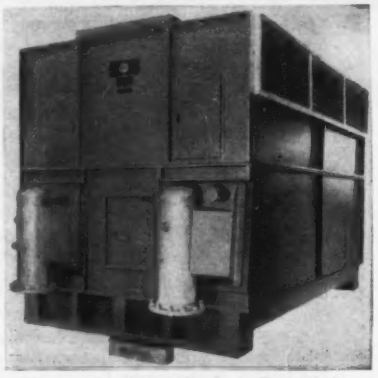
REDUCE OPERATING COST of VACUUM SYSTEMS with this "AERO" (air-cooled) VAPOR CONDENSER

With free air the cooling medium, you use the least water, evaporated in the air stream. You save the cost and pumping of large volumes of condensing water.

Air-vapor subcooling reduces mixture evacuated from the system, saving in the operation of steam ejector or vacuum pump.

This air-cooled condenser gives you more capacity than other types at a substantial saving of steam and power. Water supply, scaling treatment and disposal problems are eliminated.

You get pure condensate, an improved product; often profit by recovery of residues now wasted. There can be no contamination of your product at any time; it never touches raw water. Condensing, of water, of solvents or of your product, is simplified; you have one, compact, easily maintained unit replacing both cooling tower and barometric or surface type condenser.



Niagara Aero Vapor Condenser Panel Casing construction gives access to all parts, saves first costs in shipping and installation.

Maintenance expense is low. Niagara Aero Vapor Condenser Panel Casing construction gives access to all parts, saves first costs in shipping and installation. Summer-winter dampers and Balanced Wet Bulb Control provide precise, year 'round adjustment of capacity to load.

Constant temperature, uniform products and maximum production 12 months a year are assured. Capacities up to 15 million BTU/hr.

Write for full information. Ask for Bulletin 129R

NIAGARA BLOWER COMPANY
Dept. FI-4, 405 Lexington Ave., New York 17, N.Y.
Niagara District Engineers in Principal Cities of U. S. and Canada

Equipment & Supplies

12,500 sq. ft. per hr. in one operation. Machine (Convertamatic) has twin 13-in. brushes providing 24-in. swatch, and variable-speed control.—*Advance Floor Machine Co., 4100 Washington Ave., N., Minneapolis.* (169E)

Sanitary Power Screen efficiently handles sugar, powdered milk, and other items which tend to caramelize or gum up. Tubular construction eliminates cracks and crevices. Portable unit may be mounted either for floor discharge, or on pipe legs to straddle mixing bowls and shipping drums.—*J. H. Day Co., 4924 Beech, St., Cincinnati.* (170A)

Lightweight Highway Tractor (11,000 lb.), making greater use of aluminum for cab and chassis, converts weight saving into payload capacity. Air suspension, which curbs road shock, reduces need for structural rigidity. Unit (Model DR 862) is powered by 190-hp. diesel engine with 5-speed overdrive synchromesh transmission.—*General Motors Corp., Truck & Coach Div., 660 South Boulevard, East, Pontiac, Mich.* (170B)

Circle Key numbers on Reader Service Card

RONNINGEN COST-CONSCIOUS FLUID FILTERS

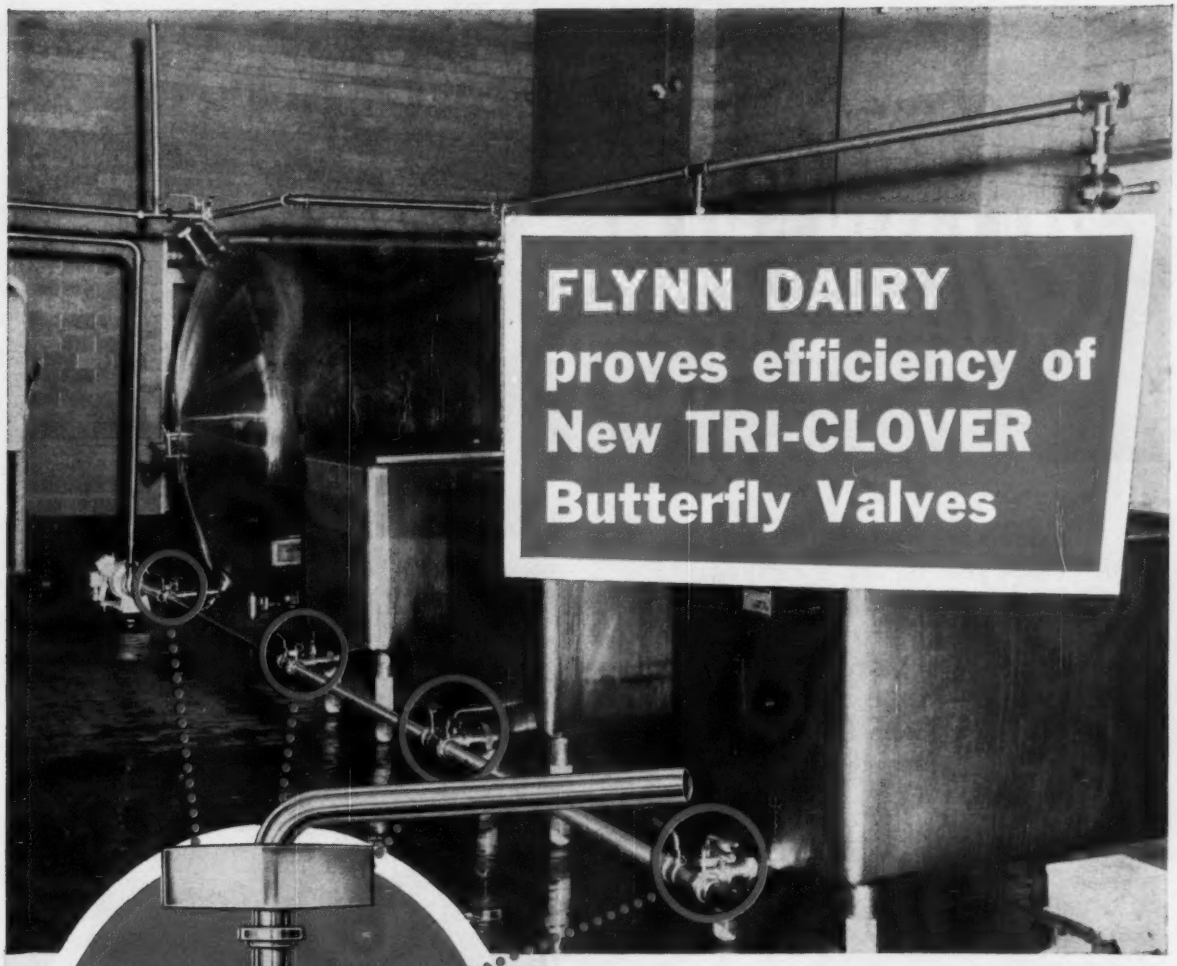
Ronningen Triplex 316 stainless steel filter unit with one filter element removed for inspection.

316 stainless steel thruout, also steel; bronze casting with monel metal fine mesh. For food products, beverages, water.

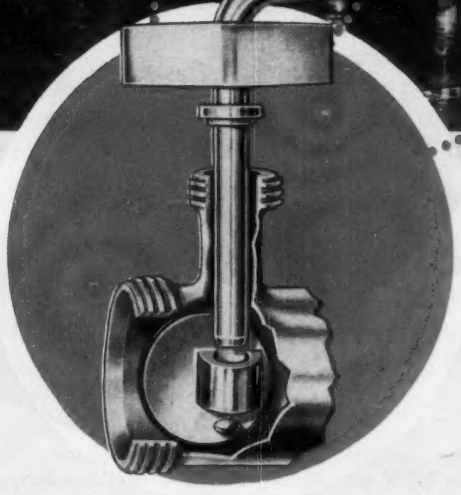
All Ronningen filters and strainers are quick-coupling—off—on—in less than a minute. All have heavy reinforced inner. Will withstand 150 PSI dead short without collapse. Continuous operation—no standby needed. 10 to 1600 GPM—pressures to 300 PSI. Liquids, hot or cold.

Write for Bulletin #45570, Dept. F
STRAIN AGAIN WITH RONNINGEN
"Particles large or small, we filter them all"

RONNINGEN-PETTER CO.
Vicksburg, Michigan Phone Midway 8-5161
Representatives throughout U. S. and Canada



FLYNN DAIRY proves efficiency of New TRI-CLOVER Butterfly Valves



The simplicity, quick-action, and ease of maintenance of new Tri-Clover Butterfly Valves have been *proved in use* . . . not only at the Flynn plant, but in numerous other installations. Check these important advantages—

Light weight • Simple, fast installation • Quick, easy cleaning • All parts interchangeable between valves • Minimum of parts • Less maintenance • Longer life • Less susceptible to damage • No plugs to replace and no lapping required.

Let our engineering staff show you how these new valves can help solve your valving problems.

Write for Bulletin BL 457.

Modern—that's the keyword for Flynn Dairy Company's big new plant in Des Moines, Iowa. And with 47 successful years' experience in maintaining their reputation for pure, tasteful, high-quality products, it was logical for Flynn Dairy to choose Tri-Clover Division's new stainless steel in-line Butterfly Valve which brings an ultra-modern concept of efficiency to sanitary valve design.

Flynn's years of experience with Tri-Clover sparkling clean "Standard" and "Tri-Clamp"® Sanitary Fittings and Pumps, and their specification of new Butterfly Valves for the new plant, is another example of the way modern dairies depend on Tri-Clover—not only for highest quality in sanitary processing products, but for the latest in modern design.

See your nearest TRI-CLOVER Distributor

LADISH CO.
Tri-Clover Division
Kenosha Wisconsin

In Canada: Brantford Ontario

TRI-CLOVER

Export Dept. 8 So. Michigan Ave. Chicago 3, USA. Cable: TRICLO

5158

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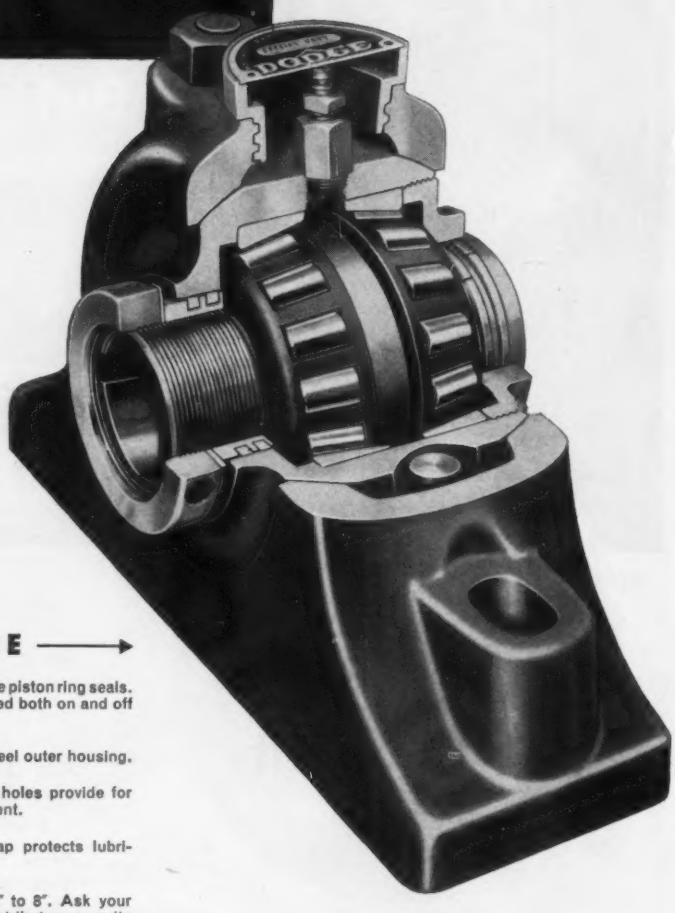
DODGE PILLOW BLOCKS

Timken Bearing Equipped

America's super-quality line—with a 34 year record of keeping performance *up* and costs *down!* Five types—to fit practically any service condition. All assembled, adjusted, lubricated and *sealed* at the factory for precision performance—long life—dependability.



SPECIAL DUTY TYPE →

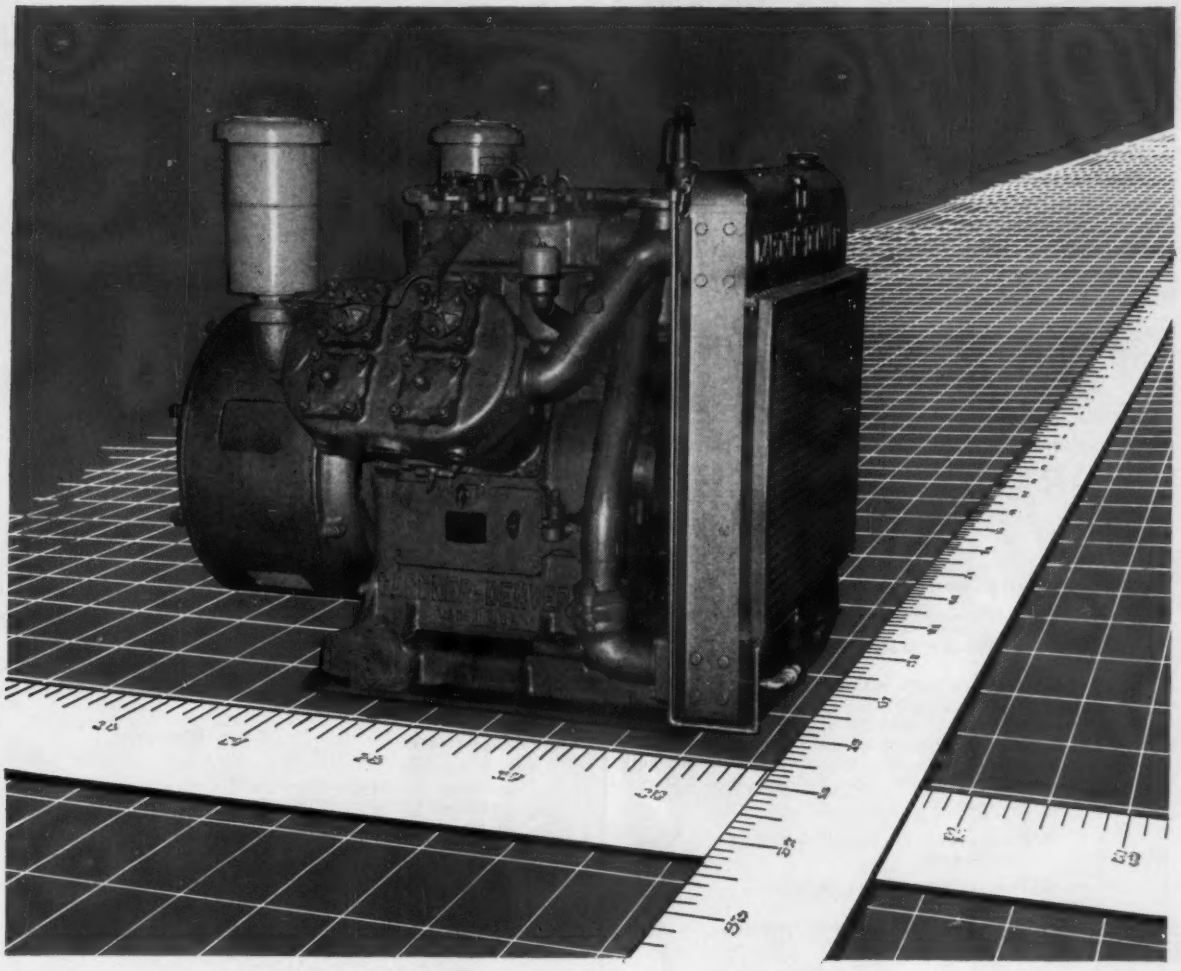
- Designed for extreme precision and high load capacities.
- Fully self-aligning.
- Special Duplex Timken Roller Bearing with tapered bore.
- Split tapered sleeve with straight cylindrical bore extends through entire length of housing.
- Easy to mount or demount. Adapter nut (or collar) clamps adapter sleeve to shaft with extreme firmness.
- Automotive type piston ring seals. Bearing is sealed both on and off the shaft.
- Rugged semisteel outer housing.
- Elongated bolt holes provide for lateral adjustment.
- Special dust cap protects lubrication fitting.
- Shaft sizes 1⅞" to 8". Ask your local Dodge Distributor—or write us for Bulletin A670 giving complete technical data on America's most complete line of mounted bearings.

DODGE MANUFACTURING CORPORATION, 2800 Union St., Mishawaka, Ind.

CALL THE TRANSMISSIONEER, your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer."

DODGE

of Mishawaka, Ind.



Made to the measure of smaller space— this high-capacity Gardner-Denver compressor

Lots of power and high capacity in a compact, space-saving package. That's the Gardner-Denver WBN compressor—an easy, economical way to side-step the soaring cost of factory floor space.

Occupying only 34 sq. ft. of space, this 200 hp unit is rated at 1150 cfm piston displacement. In many instances, this volume permits retirement of two smaller units, with corresponding savings in space.

The Gardner-Denver WBN needs no special base. Just bolt it down, hook it up and put it to work. It is available with a self-contained radiator-intercooler that conserves cooling water, or with a tube-type intercooler.

Gardner-Denver compressors are available in seven space-saving models—from 39″ to 72″ long, 47″ to 68″ wide and 25 to 200 horsepower.

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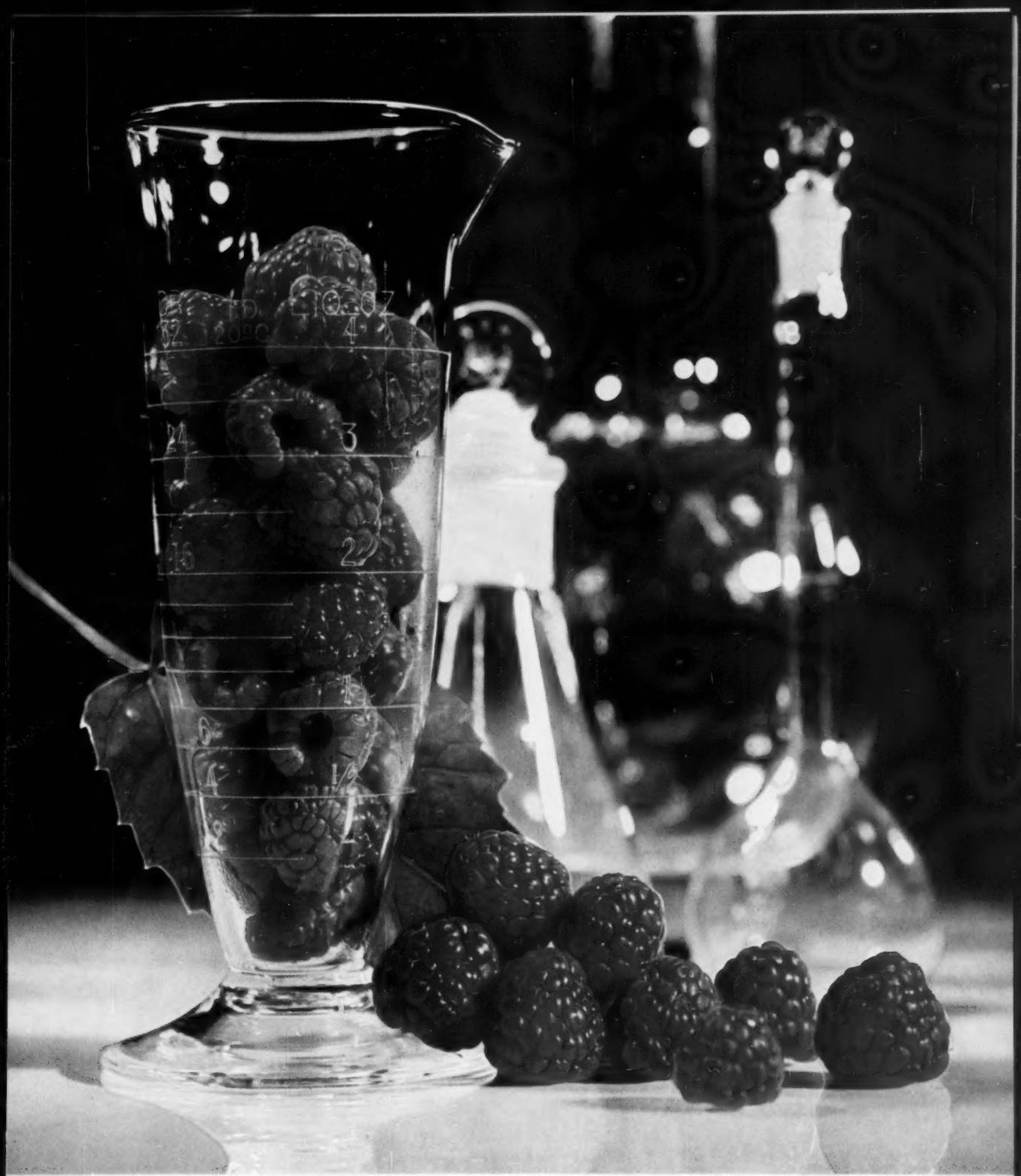

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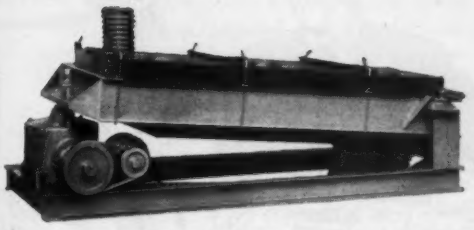

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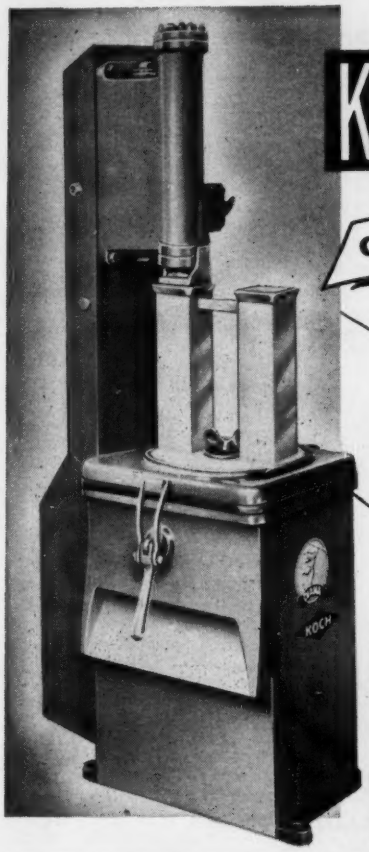

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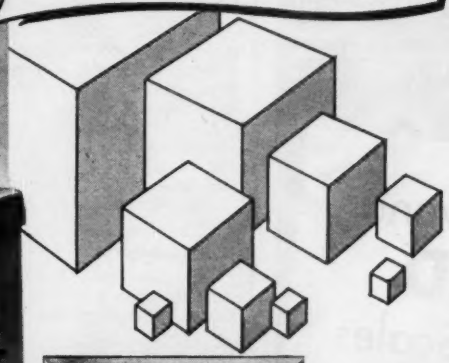

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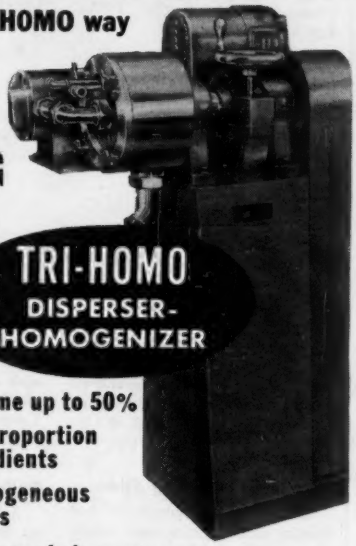

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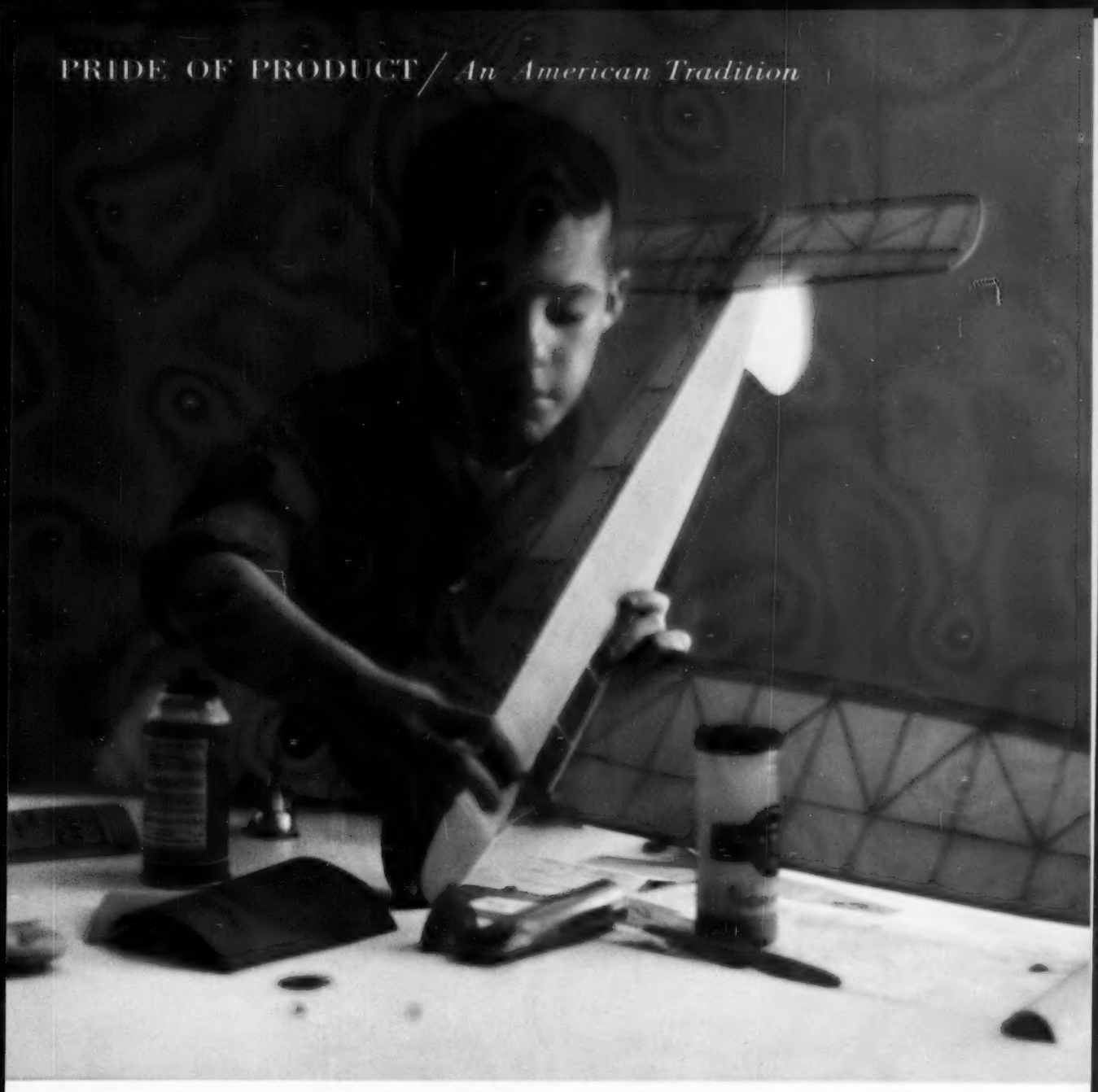

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Inside a Woman's Mind

WHAT MAKES WOMEN BUY *By Janet Wolff. Published by McGraw-Hill Book Co., 330 W. 42nd St., New York City 36. 1958. 294 pages. Price: $6.*

"An updated, sharp understanding of the modern feminine world" is the promise held out to readers by the author of this intriguing book. As a woman and an ad agency copywriter, Miss Wolff has an inside track to the workings of the female mind during a shopping tour.

The reader is presented with a revised view of the woman shopper, a shopper with new tastes, perceptions, and buying patterns. The book can serve as a valuable key to food men in all phases of the industry—from quality control to package design.

How to Make Cheese

CHEESE. *By Lucius Van Slyke and Walter Price. Published by Orange Judd Publishing Co., 15 E. 26th St., New York City. 522 pages. Price: $6.*

Intended for use as a textbook and a reference this deals with the manufacture of cheeses extensively made in the United States. These include cheddar, cottage, cream, neufchatel, and others.

The authors discuss all phases of cheesemaking, from testing to packaging. Full emphasis is given to the problems of standardization and legislation.

Pressure Can Guide

CSMA AEROSOL GUIDE. *Published by Aerosol Div., Chemical Specialties Manufacturers Association, 50 E. 41st St., New York City 17. 1957. 95 pages (loose-leaf binder). Price: $8.00.*

Designed as a guide for venders and sellers of Aerosol pressurized packages, this manual includes tests developed by the Scientific Committee of the Aerosol Div. of CSMA. It is a collection of recommendations and developments of the Committee, all the result of long and careful study by the Committee of all phases of industry and by consultation with many authorities in regard to transportation, legal and others.

Among topics discussed are premarketing product tips, labeling, flammability and combustibility, minimum sales, agencies and regulations, mailing aerosols, glossary of terms, filler safety manual, aerosol liquid densities.

Guide is illustrated.

Emulsions as Tools

EMULSIONS, THEORY AND PRACTICE *By Paul Becher. Published by Reinhold Publishing Corp., 430 Park Ave., New York City 22. 1957. 382 pages. Price: $12.50.*

This new monograph explains all the latest modern developments in the theory and practice of emulsions, beginning with facts and theories and concluding with practical formulation and commercial aspects.

Two handy appendices deal with the measurement of emulsion properties and commercially available emulsifying agents.

Book is fully illustrated and indexed by subject.

Booklets & Reports

INTERDEPARTMENTAL RADIATION PRESERVATION OF FOOD PROGRAM *(PB 131169) Published by U. S. Dept. of Commerce, Washington, D. C. 31 pages. Price: $1.* Report on first nine months of work.

COUNTERFLOW COOLING TOWER PERFORMANCE. *Published by J. F. Pritchard Co. of California, Kansas City, Mo. 85 pages. Price: $3.* Guide to cooling tower selection, use.

FREEZING POINTS OF FRUITS, VEGETABLES AND FLORIST STOCKS. *Published by U. S. Dept. of Agriculture, Washington 25, D. C. 32 pages. No charge.* Up-to-date listings of freezing points for fruits.

CONTROL OF NON-MANUFACTURING COSTS *(Special Report No. 26). Published by American Management Assn., New York City. 142 pages. Price: $3.50.* Discussion of policies adopted by some outstanding companies.

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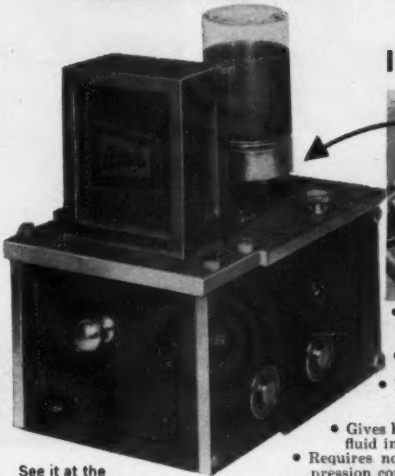

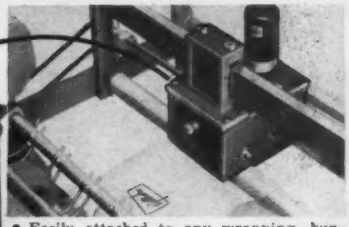

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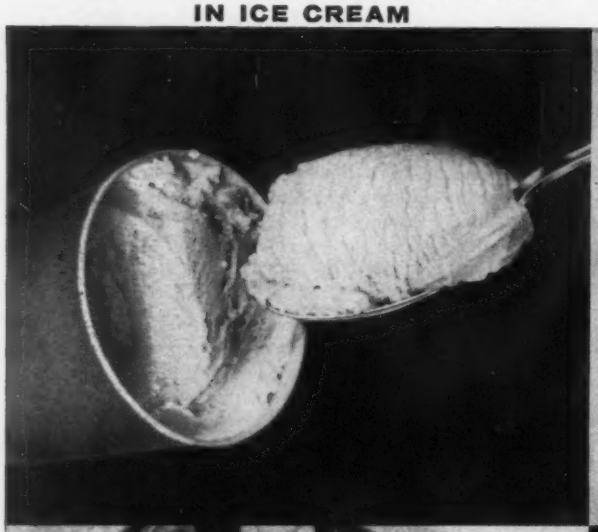

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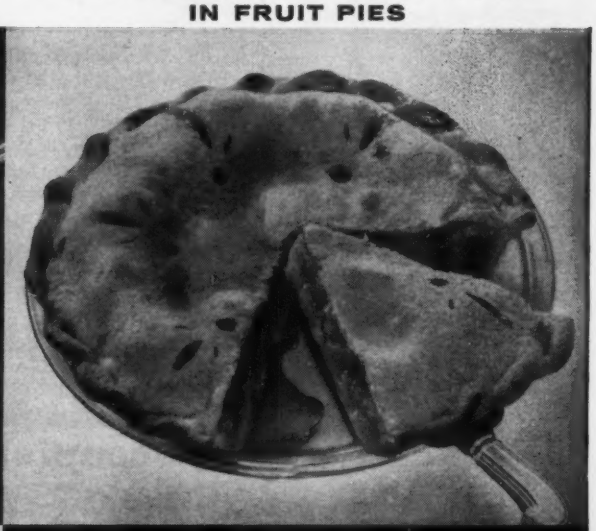

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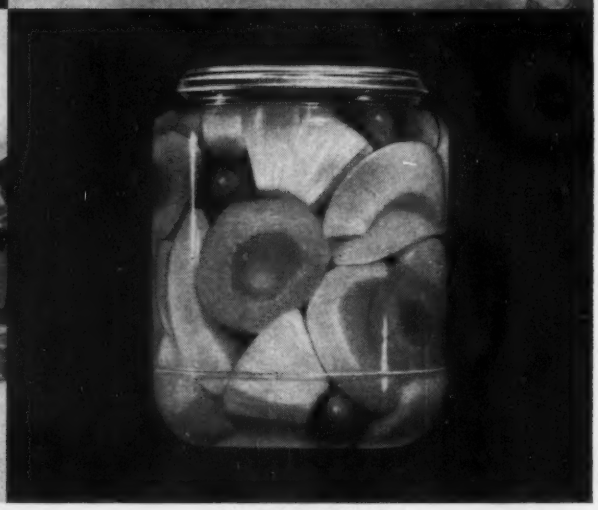

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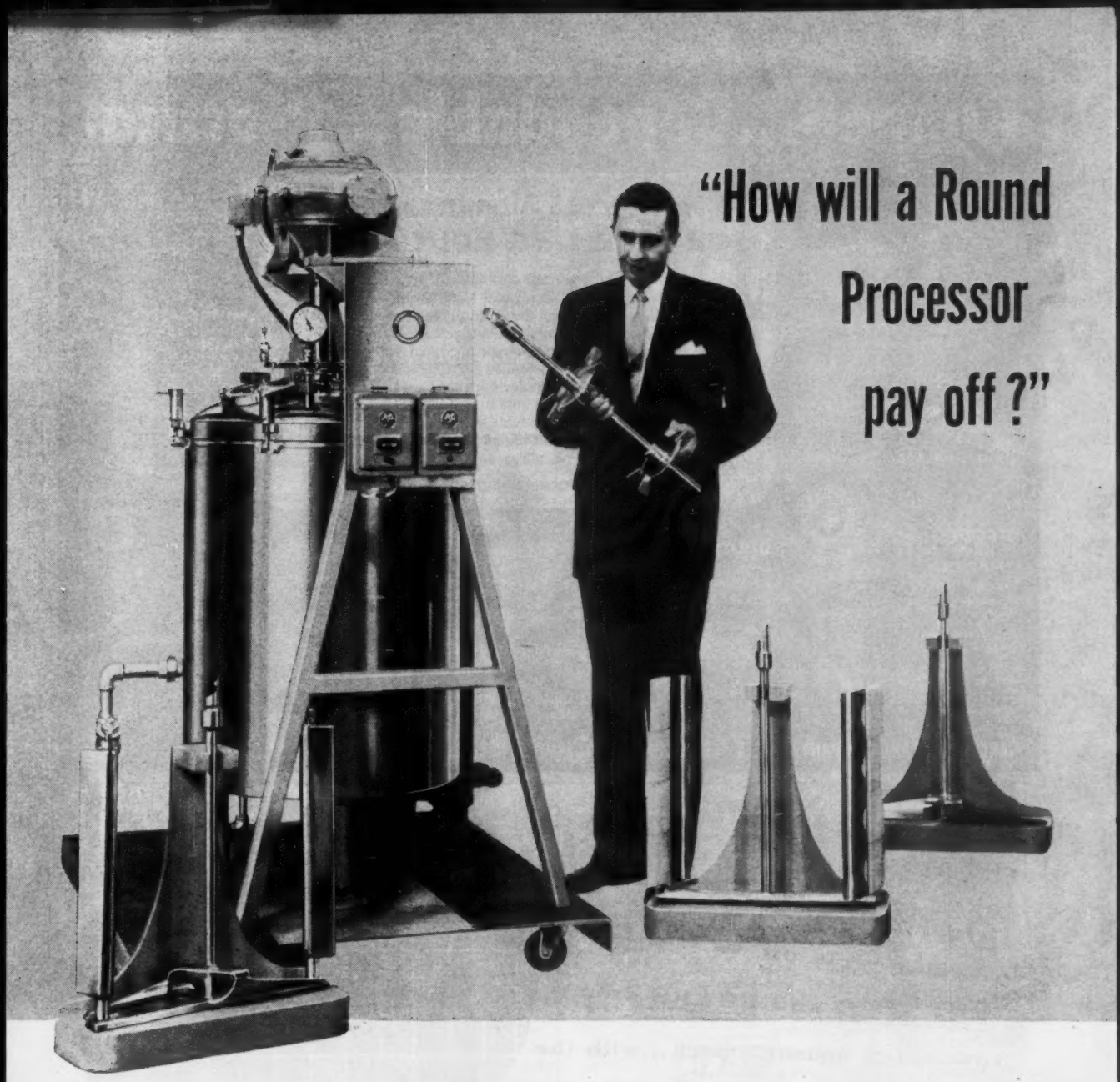

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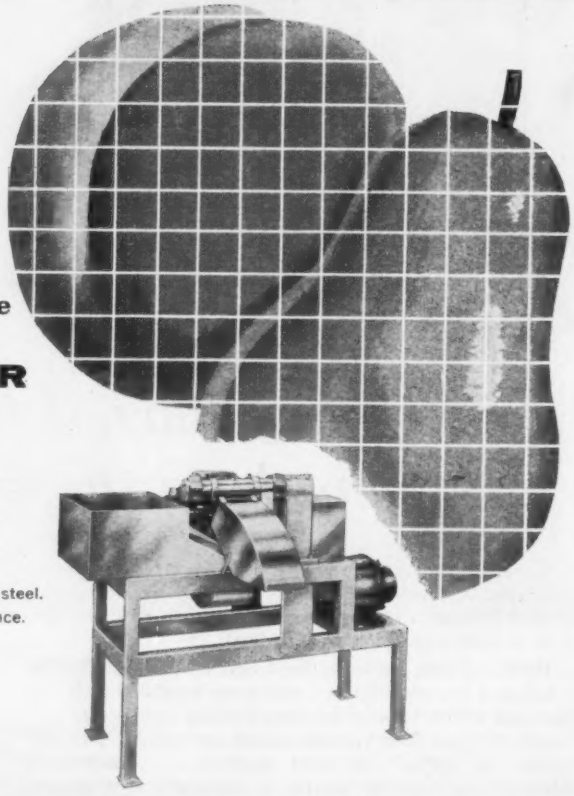

- Urschel Model G Dicer also cuts pineapple, apples, potatoes, mushrooms, onions, cabbage, celery and peppers.
- produces perfect 1/2" cubes—also adjustable for cutting other excellent pieces in sizes 1/4" x 1/2" x 1/2"—1/2" x 1/2" x 1"—1/2" x 1" x 1"—1/2" x 1-1/2" x 1-1/2" and 1/2" square french fries.
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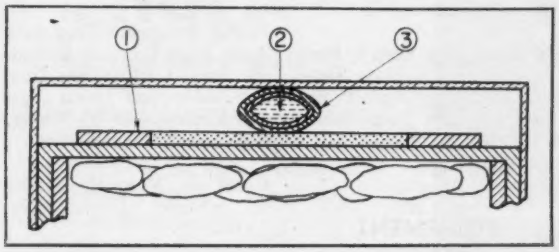

Color Reagent Indicates Frozen-Food Spoilage

System comprises indicator (1), which changes color on contacting aqueous reagent in breakable capsule (2). Latter bursts when package is frozen. At excessive storage temperature, reagent melts and indicator changes color. Capsule has water-soluble coating (3) of specified composition and thickness. It delays contact of reagent with indicator for variable time, but less than needed for spoilage.—*B. W. Power, San Isidro, Lima, Peru. No. 2,823,131. February 11, 1958.*

PRODUCTS

Emulsion-Type Sausage Employing Proteinaceous Soybean Extract as Water Binder.—USA. No. 2,816,035.

Dry Pudding Mix Employing Carboxymethyl Ether of Water-Soluble Dextran as Base—Commonwealth Engineering Co. of Ohio, Dayton. No. 2,818,343.

Food Composition Containing Minor Proportion of Discrete Jell Particles—Pillsbury Mills, Inc., Minneapolis. Nos. 2,821,477, 478, 489.

Frozen Dessert (Homogenized, Pasteurized, Oil-in-the-Water-Type) Containing Monoester—Full-Ester Blend Derived From Aliphatic Polyhydric Alcohol—National Dairy Products Corp., N.Y.C. No. 2,821,480.

Chocolate Extract Made by Agitating Aqueous Cocoa Slurry With Calcium Hydroxide (Inert Atmosphere, 20-30C.), Separating Extract—Limpert Bros., Vineland, N. J. No. 2,823,124.

Ice Cream Mix Containing Water-Soluble Dextran as Stabilizing, Bodying Agent—Commonwealth Engineering Co. of Ohio, Dayton. No. 2,823,128.

Stabilizer for Frozen, Sweet Aqueous-Base Foods Comprising Gum Suspended in Water-Free Organic Liquid—American Food Laboratories, Brooklyn, N. Y. No. 2,823,129.

Stable Pickle Liquor (for Curing Meat) Consisting of Sodium Chloride, Alkali Metal Nitrite, Ascorbate, Buffer—Griffith Laboratories, Chicago. No. 2,823,132.

PROCESSING

Aging Beef by Introducing Thamnidium (a Mold) Into Enclosed Space, Holding 7 Days at 45-60 F., Over 80% R.H.—Hodges Research & Development Co., New York City. No. 2,816,836.

Preserving Walnuts by Dehydrating to 2-3% Moisture, Storing in Moisture-Impermeable Container—USA. No. 2,816,839.

Sterilizing Canned Foods by Heating Under Pressure in Rotating Retort, Cooling—Food Machinery & Chemical Corp., San Jose, Calif. No. 2,816,841.

Processing Fruit Juices by Crushing Pulp, Adding Ascorbic Acid—R. P. Walrod, Kelowna, British Columbia, Canada. No. 2,817,589.

Heat-Processing Canned Foods Being Spun in Rotating Chamber to Increase Heat Transfer—Foremost Dairies, Inc., San Francisco. No. 2,817,593.

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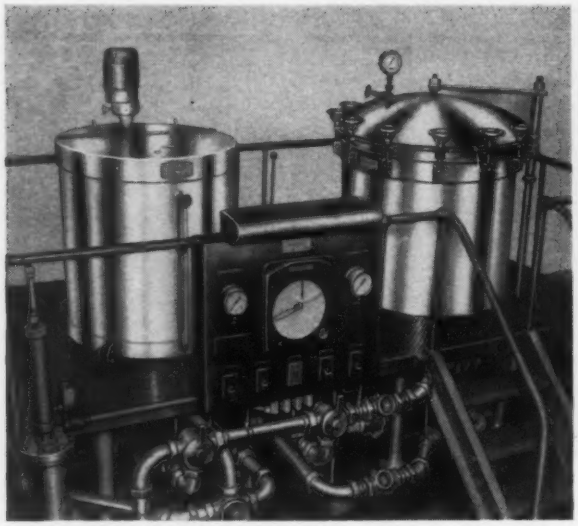

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Cane Sugar	*Grape Juice*	*Tallow*
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Cherry Juice	*Jellies*	*Vegetable Oils (all types)*
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EQUIPMENT

Ultrasonic Cleaner Containing Generator, Vibration Transmitter, Applicator—Bendix Aviation Corp., Teterboro, N. J. No. 2,815,193.

Brick Ice Cream Machine Having Cutting, Feeding, Cartoning Means—Newly Weds Baking Co., Chicago. No. 2,815,625.

Ice Cream Blender Comprising Supply Tube, Inner Concentric Member Adapted for Radial Liquid Discharge, Rotating Blade—Daggett Chocolate Co., Cambridge, Mass. No. 2,816,518.

Sandwich-Forming Machine — E. T. Oakes Corp., Islip, N. Y. No. 2,817,306.

Can Sorter Employing Conveyor, Magnetizing Circuit, Photocell—G. W. Hume Co., Turlock, Calif. No. 2,817,438.

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Oyster Shucker Comprising Conveyor, Rotatable Beaters, Separating Means — R. Q. Skrmetta, New Orleans. No. 2,818,598.

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PACKAGING

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Filler (Dry Powders, Flakes) Having Rotary Bowl, Volumetric Measuring Tubes With Rotating Hoppers, Container Conveyor, Control Means—D. M. McBean, Inc., E. Rochester, N. Y. No. 2,815,046

Plastic Fruit Carton With Rectangular Frame, Side and End Rails, Ring-Shaped Article Platforms, Integral Leg Supports—J. A. Hill, Glen Ellyn, Ill. No. 2,818,166.

Wrapping, Sealing Unit Comprising Holder for Thermoplastic Sheet, Package Support, Reciprocating U-Shaped Heater, Cutter, Label Pickup—W. J. Maust, Danville, Pa. No 2,819,574.

Beverage Container Having Multiple Units With Triangular-Shaped Tops, Rectangular One-Piece Handle—Edlo, Inc., San Francisco. No. 2,819,793.

Expandable Popcorn Package Including Open-Top Pan, Cover With Outwardly Opening Hinged Sheets—E. W. Hines, Lambert County, Ont., Canada. No. 2,819,976.

Meat Package Comprising Flexible Tubular Casing, Parallel End Faces, Thin Flat Rigid Members, Gathered End Portions Tied Under Tension—John Morrel & Co., Ottumwa, Iowa. No. 2,822,275.

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A PHILLIPS Liquid Ammonia Return System Will Protect Your Refrigeration Plant Automatically by Putting Slop-Over Where It Belongs — In the Receiver

A PHILLIPS Liquid Ammonia Return System gets liquid "slop-over" out of the accumulator in a refrigeration system almost as fast as the liquid arrives. The Phillips system sends the liquid back to the receiver quickly and automatically. Plant efficiency is increased, compressors are protected from wear and damage; operator time is saved; maintenance is decreased.

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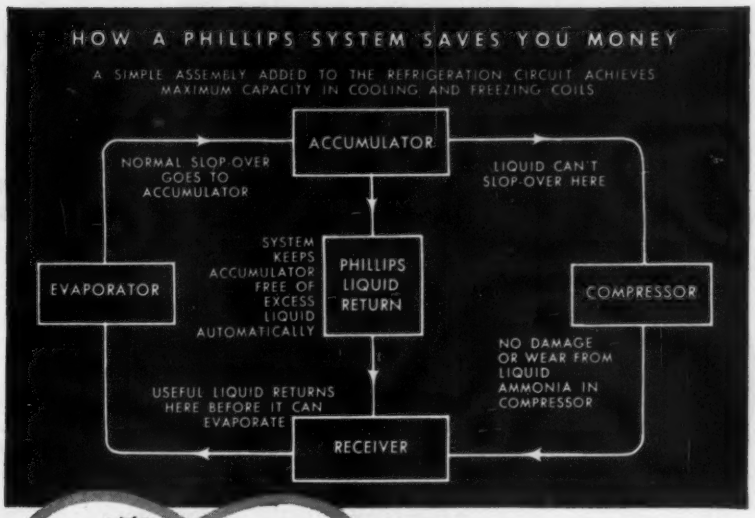
Several types of systems are available, for gravity, injection-lift and pressure-lift operation in sizes up to 1,000 tons. Let a Phillips engineer help you select the right system. Send for Bulletin LRS-56.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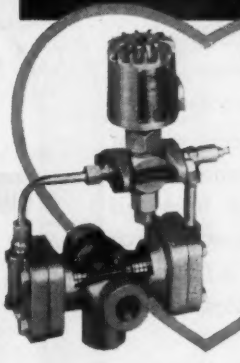
NORMAL SLOP-OVER GOES TO ACCUMULATOR
LIQUID CAN'T SLOP-OVER HERE
SYSTEM KEEPS ACCUMULATOR FREE OF EXCESS LIQUID AUTOMATICALLY
PHILLIPS LIQUID RETURN
EVAPORATOR
COMPRESSOR
NO DAMAGE OR WEAR FROM LIQUID AMMONIA IN COMPRESSOR
USEFUL LIQUID RETURNS HERE BEFORE IT CAN EVAPORATE
RECEIVER



THE HEART OF THE SYSTEM

This three-way valve, the heart of the Phillips system, helps keep it simple. The three-way valve teams up with the check valves and dump trap to keep liquid level down in the accumulator: The valve opens the line between the accumulator and Phillips liquid dump trap, to drain the accumulator; then lets high-side pressure through to empty the trap into the receiver. Process repeats automatically, as required.

PHILLIPS FLOAT CONTROLS

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REFRIGERATION CONTROL SYSTEMS
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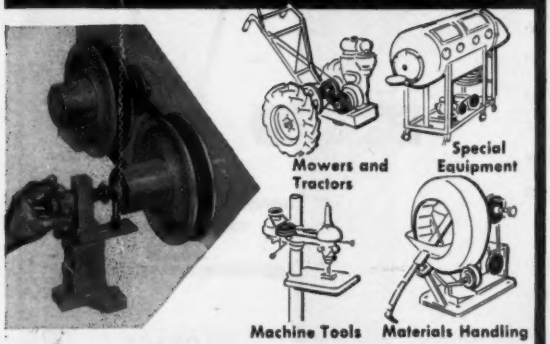
SPEED SELECTOR
VARIABLE PITCH SHEAVES
Control Speeds on Variety of Machines



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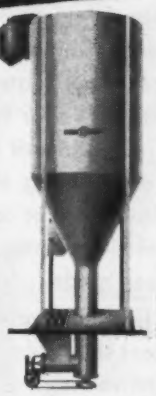
SPROUT-WALDRON
VERTICAL MIXERS



These mixers handle an amazingly wide variety of materials with less horsepower, less floor space, less maintenance, less first cost than any other type of mixers. Sizes up to 1500 cu. ft. can operate on as little as 30 h.p. They're completely self-cleaning. Ideal for use as agitated storage reservoirs.

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Sprout-Waldron also offers a complete line of horizontal mixers. Write for details.

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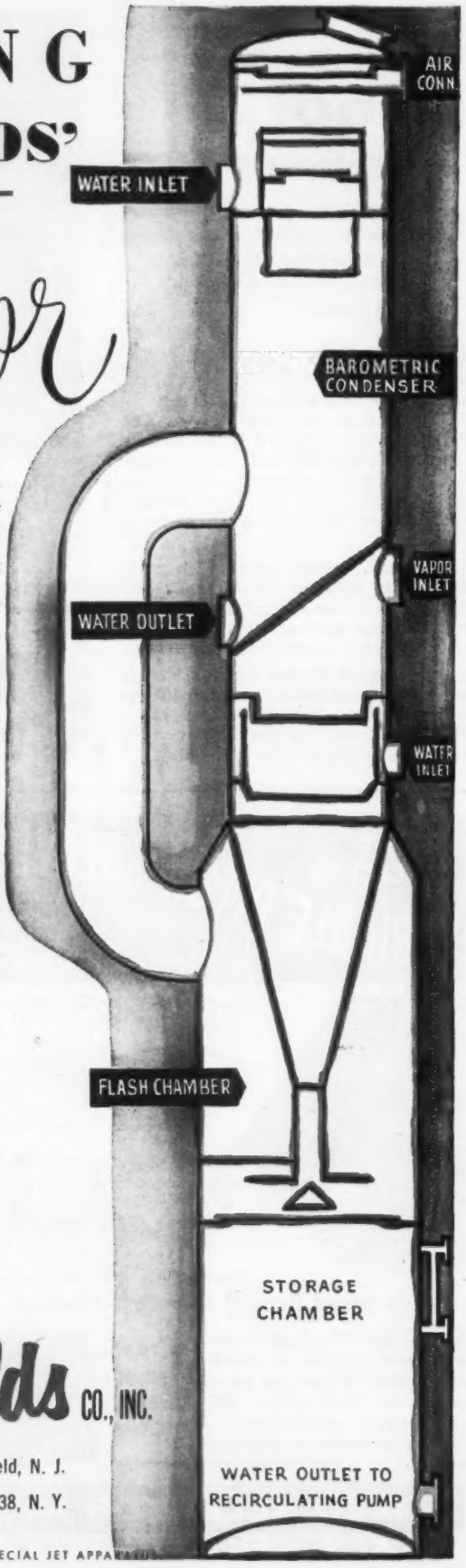
NEW Convactor



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In the refining of edible oils it recovers fatty acids, most of which were formerly waste. It offers the additional advantage of totally eliminating stream pollution from this source or the expense of cleaning cooling towers which collect such deposits. It has similar application in fatty acid stills, some other types of distillation processes, dryers, and other large vacuum processing units.

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(everything but nature)

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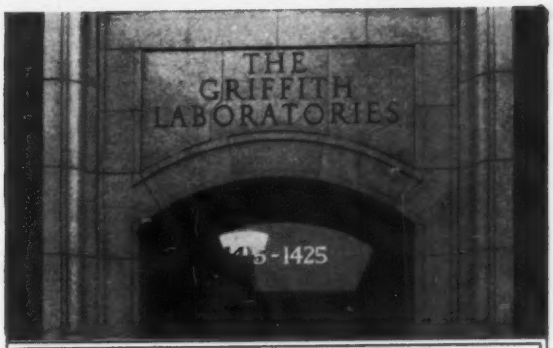

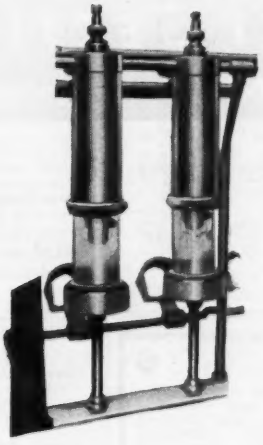

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Continued on opposite page)

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(Continued on opposite page)

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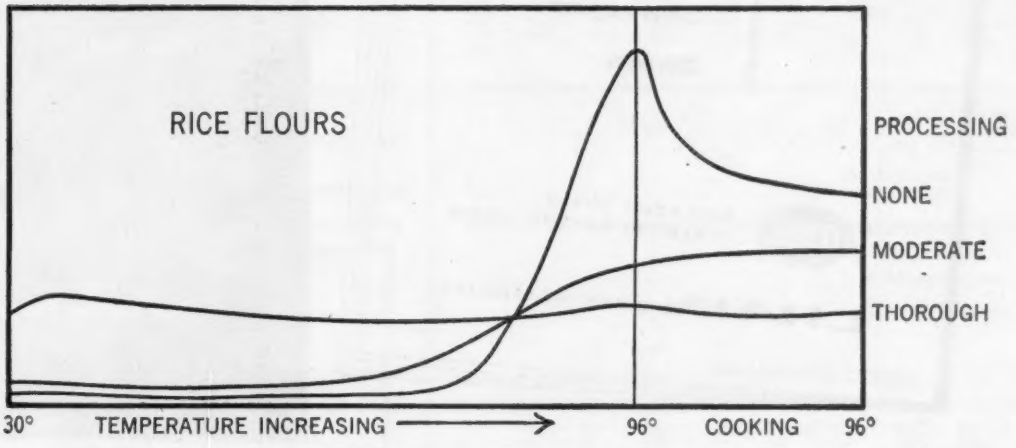

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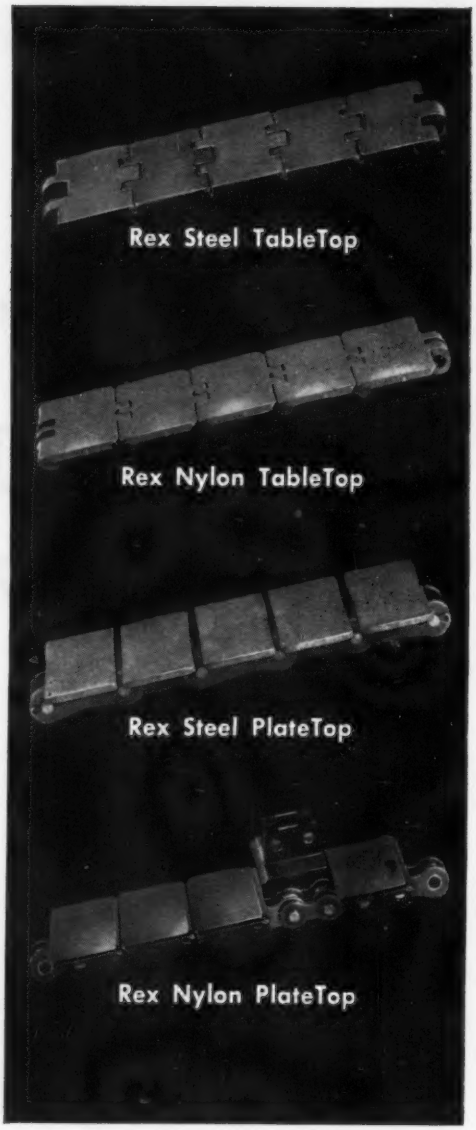

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